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ABSTRACT

Postsecondary instructional dynamics is a complex process in which inputs (student characteristics and expectations, resources, and faculty characteristics and preparation) are converted through the educational process (instruction strategies, models, and techniques as well as supportive services) into outputs (outcomes and benefits of instruction to students and faculty that are identifiable through assessment). Through feedback, outputs from one period of time are transmitted back to inputs for a later time. Together with a context for instruction (which includes such factors as new and continuing students, faculty, and interest groups), these dimensions of postsecondary education interact with one another to form the process of instructional dynamics. As the demand for accountability and academic reform on the part of two-year postsecondary institutions increases, instructors and administrators will need to turn their attention to the major problems and issues in instructional dynamics, including student participation, attributes, learning styles, intellectual development and capacities for critical thought; assessment of student outcomes; comparative studies about teaching and learning across the curricula now found in two-year colleges; research to determine what factors in instructor career preparation will improve student learning; the relationship between student learning needs and expectation; organizational structures and management practices that might result in more active learning; and the impact of technology on two-year college teaching practices and on access to information and development of literacy. (MN)

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INSTRUCTIONAL DYNAMICS IN TWO-YEAR POSTSECONDARY INSTITUTIONS: CONCEPTS, TRENDS, AND ASSESSMENT ISSUES

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FOREWORD

This paper examines the instructional process in institutions for 2-year postsecondary education. The literature reviewed relates to student and faculty characteristics, disparities between students and faculty in the instructional process, instructional delivery systems and strategies, instructor preparation, instructional support services, and assessment of student and instructional outcomes. Trends in 2-year postsecondary education are identified, and areas of needed research are recommended. It should be of interest to postsecondary vocational and adult educators, including federal and state agency personnel, teacher educators, researchers, administrators, teachers, and support staff.

The profession is indebted to Dr. Richard L. Alfred and Ms. Mary L. Hummel for their scholarship in preparing this paper. Dr. Alfred is Associate Professor and Program Chairperson of Higher and Adult Continuing Education at the University of Michigan. He is also Director of Community College Specialization in Higher and Continuing Education, the University of Michigan. Previously, he served as Vice President of Finance, Planning and Management and as Executive Assistant to the President and Director of Educational Planning and Development at New York City Community College. Ms. Hummel is Residence Education Coordinator and a Ph.D. candidate in Higher and Adult Continuing Education at the University of Michigan.

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in Vocational Education

EXECUTIVE SUMMARY

Accountability and academic reform in 2-year postsecondary education institutions are necessities stated in a 1986 report released by the U.S. Department of Education. Such academic reform requires innovation in instruction to bridge the gulf between educational needs and delivery systems, as well as improved understanding of instructional dynamics. This paper examines concepts, trends, and techniques in 2-year postsecondary education instructional dynamics.

The first section presents a conceptual model in which inputs (student characteristics and expectations, resources, and faculty characteristics and preparation) are converted through the educational process (instructional strategies, models, and techniques, as well as support services) to outputs (outcomes and benefits of instruction to students and faculty identified through assessment). The final part of the model—feedback—transmits outputs from one period of time back to inputs for a later time. Together with a context for instruction, these dimensions of postsecondary education interact with one another to form the process of instructional dynamics. The text explains these dimensions of instructional dynamics and assumptions guiding application of the model to practice. Sections of the paper consider the relationship of inputs, the educational process, and outputs to instructional dynamics.

Major problems and issues in instructional dynamics will require the attention of 2-year college instructors and administrators in the next decade. Issues related to student learning, curriculum organization, teaching and instructors, organizational context, and technology are worthy of consideration in the feedback dimension of the framework. Questions are posed for the following:

- Student participation and involvement
- Student attributes and learning styles
- Student intellectual development and capacities for critical thought
- Assessment of student outcomes
- Comparative studies about teaching and learning across the curricula now found in 2-year colleges
- Research necessary to determine what factors in instructor career preparation will improve student learning
- The relationship between student learning needs and expectations, organizational characteristics, and leader expectations in 2-year colleges
- Special organizational structures and management practices that might result in more active learning
- The impact of technology on 2-year college teaching practices

- The impact of electronic technology on access to information and development of literacy

The complex process of instructional dynamics—involving the linkage of instructors, learners, resources, technology, and organizational context factors—will continue to draw questions from policymakers and interested observers until this linkage is better understood. Replicable research of postsecondary education is needed to pinpoint the aspects of instructional dynamics that are effective in improving specific dimensions of teaching and learning.

INTRODUCTION

Two-year postsecondary education is approaching its first sustained experience with concurrent themes of accountability and academic reform. The major opportunities and initiatives for academic reform facing 2-year institutions as they approach the 1990s will require innovation and improved understanding of instructional dynamics. The need for innovation in instruction to bridge the gulf between educational needs and delivery systems is not a new issue, but it is a new concern. The issue was well stated by Carrter (1975):

> The predominant theme of the 1960s in higher education was quantitative growth—development of the new programs and institutions and physical expansion of old ones to serve a rapidly expanding young audience. The emergent theme of the late 1970s and 1980s must be qualitative growth—strengthening of educational processes, adaptation to new social needs and new audiences, and effective use of scarce resources. Because academic budgets in the past have depended principally on enrollments, some view with alarm the prospect of a declining college-age population. Yet such a period permits a reordering of priorities and provides an opportunity for colleges and universities to place high on the agenda efforts to provide inner growth and educational enrichment. The resilience of educational institutions will be tested in their responses to these changing needs and resources. (p. xi)

This paper examines concepts, trends, and techniques in 2-year postsecondary education instructional dynamics. "Two-year postsecondary institutions" include the total number of public and private institutions in the United States offering the associate degree. The term "instructional dynamics" represents an amalgam of three important dimensions in instruction: *participants* in the process (instructors and students), *resources* applied to the process (finances, facilities, and equipment), and *strategies* employed in the process by instructors to impart knowledge and skills to students. Viewed from the perspective of researchers and practitioners interested in improving instruction, "instructional dynamics" may be defined as the composite of techniques, resources, procedures, and strategies used by faculty engaged in classroom instruction to impart knowledge and skills to students under variable conditions of time, space, technology, and learning context.

The first major section presents a conceptual model including various dimensions of postsecondary instructional dynamics and assumptions guiding application of the model to practice. The major heuristic dimensions in the model are *Antecedent Conditions*, which include student characteristics and expectations, instructional resources, and instructor characteristics and preparation as input into the instructional process; *Educational Process Conditions*, which include instructional modes and strategies, student learning styles, instructor values and attitudes, and instructional support services as the context for interaction between teacher and learner; and *Educational Outcomes*, which encompass all of the benefits experienced by students and faculty as a result of their participation in instruction. Application of theory to practice is not accomplished successfully without attention to the factors upon which conceptualization is based. Hence, the model identifies specific factors requiring consideration in instructional dynamics as well as the relationships between these factors.

The next two sections review student and faculty inputs into instruction including personal and demographic characteristics, attitudes, preparation for study, and background training and experience. Discussion of the input factors includes a review of relevant national data about 2-year college instructors and students—data that, when considered in a comparative context, point to potential disparities between faculty and students regarding their outlook on instruction. This section concludes the examination of antecedent conditions with an analysis of disparities in the values held by instructors and students. Prominent in this section are answers to questions regarding problem areas that draw instructors and students into conflict, sources and effects of faculty alienation, student attrition and retention, and implications of value disparities for instructional dynamics.

Sections four and five consider the relationship of instructional strategies and support services to instructional dynamics. Viewed as the Educational Process dimension of instructional dynamics, these factors involve the modes of instruction and support services employed in the teaching/learning process. The literature is examined in relationship to eight general instructional mode classifications: individualized instruction, cognitive instruction, affective instruction, mediated instruction, mental skills instruction, interdisciplinary instruction, experiential learning, and holistic instruction. Space, time, and technology are examined as flexible elements in instructional dynamics that can be altered to suit instructor and student needs. For all of the innovations that may be attempted in instruction, there may be limited success in the absence of support services that adapt students to programs through academic procedures employed at admission (academic advising, placement testing, and orientation), course enrollment (library services, instructional media, and tutoring), and exit (placement counseling and articulation). Therefore, how teaching and learning take place (dynamics), as well as the services that are provided to improve the transfer of knowledge from instructor to student, are critical factors.

Section six reviews the literature and research related to assessment of student and faculty outcomes in instruction. Presented as the outcomes dimension of the conceptual model, assessment of the outcomes/benefits of instruction can be carried out in a number of different ways: student perceptions of different learning modes, assessment of student flow in courses and curricula, follow-up research on student outcomes following termination of study, and faculty perceptions of instructional effectiveness. Each of these methods includes a review of the relevant national literature on the outcomes of instruction in 2-year postsecondary institutions.

A summary section presents a series of questions that require attention from instructors, administrators, and researchers as part of an action agenda for improvement of instructional dynamics in 2-year postsecondary institutions.

INSTRUCTIONAL DYNAMICS: A CONCEPTUAL OVERVIEW

Instructional dynamics includes the strategic arrangement of techniques, procedures, resources, and instructional modes (i.e., forces) so as to impart knowledge and skills (i.e., change) to students under variable conditions of time, space, and context. As a process, instructional dynamics joins teachers and learners to numerous other actors who have a stake in instruction, particularly its effectiveness. These actors include college administrators, trustees, officials in state coordinating boards, legislators, accrediting associations, unions, and sometimes policymakers in federal government agencies. Also included in the instructional dynamics process are the ideas, resources, stimuli, and constraints that influence the participants.

Instructional dynamics implies a pattern of change or growth evolving from a particular arrangement of ideas and resources that may be affected by intense controversies. Within the environment, participants and decision makers often assign differing interpretations to the goals of instruction; to the arrangements of ideas and resources that are suitable for achieving each goal; to the probable impact of instructional strategies on participants, decision makers, and interested parties; and to the implication of particular strategies and outcomes in relation to other activities of postsecondary education. Many of these interpretations are formulated with a surplus of emotion and a dearth of information. Educational decision makers frequently make important decisions about resource allocation with limited information about instructional dynamics and with nothing more than a "best guess" about the effects of these decisions on the problems they are designed to solve.

Conceptual Model

To achieve a comprehensive understanding of instructional dynamics in 2-year postsecondary institutions, a conceptual model is necessary to array properly the multiple dimensions of the process. This framework leads the reader to comprehend both the important dimensions of the process and the relationships that make each dimension important to the others. The framework of this process model includes the following elements:

- an environment or *context* for instruction that stimulates instructors and receives the products of their work
- multiple *inputs* from the environment in the form of human and financial resources that carry unique characteristics from the environment to the instructional process
- discernible *outputs* that carry the results of instruction to the environment
- a conversion or *educational process* dimension that transforms (converts) inputs into outputs through the application of teaching modes and support services in the instructional process
- identifiable *feedback* that transmits the outputs of one period in time—as they interact with features in the environment—back to the educational process dimension as the inputs of a later period in time.

All of these dimensions interact with one another. Together they form the process of *instructional dynamics* as outlined in figure 1.

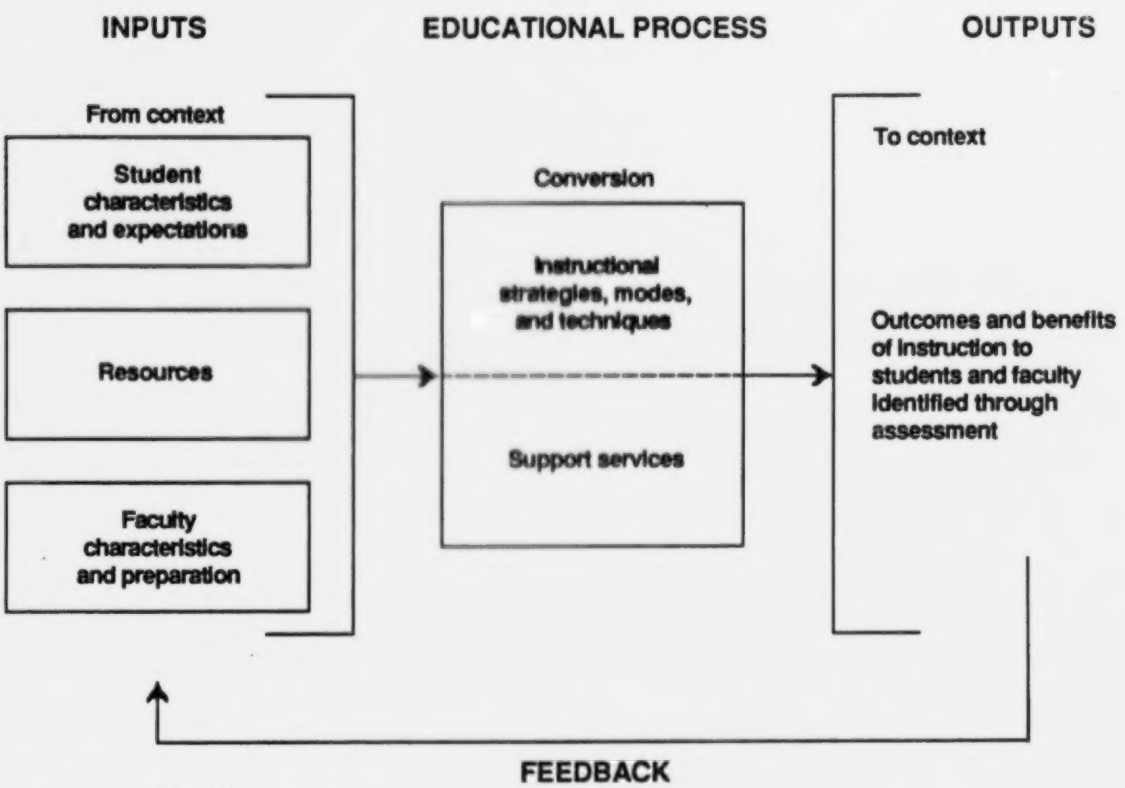

Figure 1. Process model of instructional dynamics in 2-year postsecondary institutions.

Context and Inputs for Instructional Dynamics

The context for instructional dynamics in 2-year postsecondary institutions includes a host of human and financial resources that present problems to faculty and students in the classroom and that subsequently require specific strategies and support services to resolve these problems. Within the context dimension are (1) new and continuing students with specific characteristics and expectations who are to benefit from instruction; (2) faculty who by virtue of their professional preparation, training, and characteristics determine strategies for the delivery of instruction using resources provided by the institution; and (3) interest groups within and outside of the institution—administrators, boards of trustees, legislators, higher education coordinating boards, citizen groups, and so on--who determine the allocation of resources to instruction through provision or withholding of support. Whereas some features of the context dimension facilitate instructional development and improvement of instructional dynamics, other features constrain development and frustrate the efforts of faculty and administrators to cope with them.

Instructional inputs include faculty, students, and financial resources emerging from the context dimension and entering the educational process dimension at one period in time. Students with particular characteristics, goals, and expectations require specific outcomes of instruction (e.g., job skills, preparation for further education, cognitive skill training) to achieve academic and career goals. They also require the adaptation of instructional strategies to learning needs and emotional satisfactions inherent in teaching and learning. These satisfactions may take the form of knowledge obtained through exposure to a routine lecture; they may be the result of an innovation in teaching strategies to improve learning outcomes; or they may be associated with the development of new support services that improve student learning in a traditional learning environment.

Students are not the only source of inputs to instruction. Instructors bring particular needs and demands to instruction in the form of characteristics, values, and attitudes that permeate their approach to teaching. Some of these needs are informal and others are not even expressed. Instructors express special needs to administrators through the budget process and routine needs in the form of requests for resources as student needs for instructional strategies and support services become evident. Moreover, instructors are subject to expressions of need from students that may differ from their personal needs. These different need sets reduce to one major characteristic of faculty inputs into instruction: the expectancy or probability that behavior directed to teaching can determine the occurrence of specific learning outcomes sought for students within the limits of available resources. The opposite may also be true: satisfaction may be lowest when faculty hold the expectation that the behavior they direct to teaching cannot determine the occurrence of specific learning outcomes in students. Instructor satisfaction may, therefore, be a product of congruence between individual expectations and student performance and between instructional objectives and financial resources. When the academic performance of students and when the resource allocation behavior of administrators fall short of expectations, subtle alterations could occur in instructional inputs that could lead to marginal learning outcomes in students.

Resources include personnel, skills, material, equipment and supplies, technology, and finances. Support for instruction is evident in the willingness of external funding sources and administrators to allocate financial resources for the delivery of instruction. It is also evident in activity directed to instructional development and in sentiments toward instructors and students. Sentiment can range from enthusiasm for innovations that address critical problems in the teaching and learning process to hostility toward the involvement of instructors in collective bargaining. Between these extremes are the typically more passive attitudes of administrators toward instructors and students.

Educational Process

It is not only inputs that influence instructional dynamics in 2-year postsecondary institutions. Features of the educational process such as the structure of the academic organization; procedures used by instructors and administrators to make decisions about courses, curricula, instructional strategies, and support services; and instructor preferences for specific instructional techniques add shape and form to instructional dynamics. Faculty must take into account numerous factors that are relevant to their decisions about what instructional strategies to employ in the teaching/learning process. Administrators must determine what resources and support services are necessary to ensure effective instruction and must evaluate the costs associated with different instructional strategies.

Among the features in the educational process dimension that influence instructional dynamics are disparities between the expressed needs of students for instructional strategies and support services that facilitate learning and the personal values of faculty; administrators' use of routine

procedures for academic planning and budgeting to simplify complex phenomena in the instructional process; and tendencies toward rigidity in the face of pressures for innovation. Concerned about issues of efficiency and productivity, administrators may hesitate to allocate resources to instructors engaged in instructional development unless evidence can be presented as to the specific outcomes and benefits of such activity. Indeed, it is partly because of differential relationships among the parties involved in instruction that there is confusion and disagreement among instructors as to strategies to use for the delivery of effective instruction.

Outputs of Instructional Dynamics

The outputs of instruction include long- and short-term benefits to students and public- and private-sector constituencies. To the private sector, instruction facilitates satisfaction of the needs of individual citizens for job training, advanced income, knowledge for living, and participation in community affairs. Instruction also provides direct benefits to business and industry in the form of a trained labor force and access to professional staff with knowledge vital for corporate development. To the public sector, instruction provides direct and indirect benefits to state and local government: purchases of goods and services from vendors, jobs, taxes paid by students and staff, economic and social mobility of citizens, and reduction of social disorganization. Although administrators and external funding sources can provide instructors with the resources necessary to produce desirable learning outcomes in students, it is the instructor who determines the quantity and quality of output through choices made about instructional dynamics. Failure to make sound decisions about instructional strategies, context, and delivery systems can result in "negative outputs" that carry long- and short-term deprivations for students and public- and private-sector constituencies.

Feedback

Feedback represents the influence of earlier outputs produced through instruction upon the human and financial resources (faculty, future students, facilities, and operating budgets) that the institution is able to direct to instruction. The quality of outputs produced influences the flow of resources to the college in the form of government assistance (local taxes, state aid, and federal financial aid) and tuition revenue (new student enrollments). Public service instructional activities directly affect the satisfaction of individual participants and thus shape their demands and support for postsecondary education. Past efforts to promote economic development through instructional programs may affect individual citizens and government agencies in ways that influence both the resources provided through taxes and participation in services and activities.

Feedback mechanisms are evident in the continuity of interactions among instructors, administrators, funding sources, and the recipients of instructional benefits. The annual budget cycle, for example, requires a college to demonstrate the value of its instructional activities and outputs of the current year and its proposals for the coming year in organized meetings involving trustees and policymakers. On these occasions, evidence of instructional accomplishments and of unmet needs come back to instructors in the form of budget ceilings for the coming year. In less formal ways, administrators and policymakers are always engaged in some effort to improve the outputs of instruction by stimulating instructors to increase productivity through improvement of instructional dynamics.

Systems Framework for Instructional Dynamics

The context, input, educational process, output, and feedback dimensions of instructional dynamics relate to and interact with one another in the manner shown in figure 1. The entire set of these dimensions and their interactions in a national spectrum of 2-year colleges is called instructional dynamics. The concept of instructional dynamics includes more than the strategies, modes, and techniques of instruction used to produce desired learning outcomes in students. Instructional dynamics is the combination of instructional strategies and all of the dimensions that support or flow from instruction. These include the *context* in which instructional strategies are employed, *inputs* to and *outputs* from instruction in a particular context that are connected to each other by the particular instructional strategies, techniques, and support services used by instructors in the *educational process* and by *feedback mechanisms*.

A system such as this is a useful framework for examining instructional dynamics in 2-year postsecondary institutions. It focuses attention not merely on a simple description of discrete parts, but also on the importance and relationship of these parts to one another. By thinking about instructional dynamics in a systems framework, practitioners can themselves think in terms of the relationship of multiple dimensions required for instructional effectiveness in 2-year postsecondary institutions. For example, what implications for outputs are to be found in particular instructional strategies and techniques employed in the educational process? How do faculty in academic departments respond to inputs from students, administrators, and funding sources regarding instructional strategies and outputs? What kinds of constraints over instructional outputs are exercised by the amount of resources that are directed to the educational process by funding sources and administrators? This kind of thinking establishes the relevance of instructional dynamics to resources, to decision making, and to other features of academic management that shape the context for instruction.

STUDENT AND FACULTY INPUTS INTO INSTRUCTION

Two-year college educators increasingly recognize that there are many factors in the environment that influence the interchange between student and instructor and that information about instructional dynamics becomes more meaningful when this fact is kept in mind. Instructors and administrators know that the impacts of instructional dynamics may vary significantly when student characteristics are taken into consideration. These characteristics influence decisions in the implementation of instructional strategies and shape the context for assessment of instructional effectiveness. This section provides an overview of each of these input components as well as the direction and degree of their influence on instructional dynamics.

Trends in Student Characteristics

Diversity in student background characteristics such as learning styles will naturally make a difference in the development and use of instructional strategies. Students with different needs and learning styles will require exposure to different instructional strategies to produce positive learning outcomes. Because contextual variables in the learning process cannot be controlled, significant relationships among student characteristics, instructional strategies, and student learning outcomes are difficult to document. Yet, it is possible to describe trends in student characteristics and to cite their implications for instruction.

The most obvious problem is how to examine and interpret student background data using information from a variety of sources. Research reports generated by 2-year colleges, university research centers, and state agencies for postsecondary education report student information in categories that can be used to classify students into groups according to background characteristics, aptitudes, attitudes, and perceptions. The use of such categories suggests that student classification into subgroups defined by specific variables such as differences in student attitudes, needs, and learning styles constitutes valuable information for analysis. Presented in this section is a multiple-year profile (1976-1984) of trends in characteristics of students enrolled in 2-year postsecondary institutions. The profile data are reported in two classifications each with important implications for instructional dynamics: background characteristics and characteristics with direct application to learning.

Background Characteristics

Between 1976 and 1984 total enrollment in 2-year postsecondary institutions increased 17 percent from a level of 3.8 million students in 1976 to 4.5 million students in 1984 (data collected by the National Center for Education Statistics). Of this population, approximately 5 percent of the students were enrolled in private colleges and 95 percent were enrolled in public institutions. In 1984, almost two-thirds (62 percent) of the 2-year college students were enrolled part time—up from a level of 57 percent in 1976. When examined in relation to variables of sex, age, and race, 2-year college students exhibit a marked tendency toward increasing numbers of women, older students, and racial and ethnic minorities. Between 1976 and 1984 enrollment of female students as a percentage of the

population increased from 49 percent to 55 percent, the number of students represented in the 35 and over age group increased from 37 percent to 39 percent, and the number of racial and ethnic minority students increased from 21 percent to 22 percent.

Student profile data collected annually by national testing organizations (American College Testing Program, College Entrance Examination Board, and Educational Testing Service), state agencies, and individual institutions affirm these trends in age, sex, racial ethnicity, and enrollment status of 2-year college students. These data also reveal distinct trends in major field enrollment among prebaccalaureate students. For example, national data document a dramatic shift from enrollment in liberal arts to occupational programs (*Chronicle of Higher Education* 1986). Data describing patterns of major field enrollment among 2-year college students have been used as a benchmark for the examination of differentials in attitudes, values, and goals applied to postsecondary education by students enrolled in different programs (Wu 1985).

The student population in 2-year postsecondary institutions can appropriately be described as a commuting population. The majority of students reside within the immediate college service region, more than half of the students work full time while attending college, and community residents (such as family, friends, peers at work) serve as primary referents for behavior (Alfred 1975; Cohen and Brawer 1982). The reasons students indicate for college attendance range from occupational advancement to self-enrichment. A significant number of students aspire toward the baccalaureate degree—perhaps as many as 50 percent of an entering freshman class—but the majority do not complete the associate degree (American Association for Community and Junior Colleges [AACJC] 1985). Perhaps the most striking feature of the student population in 2-year postsecondary institutions is that the population currently made up of students once termed "special" (such as minority, foreign, disadvantaged, older, and veteran students) is now a "traditional" student population.

Characteristics with Direct Application to Learning

Special students have special needs requiring different emphases in the organization and delivery of instruction and support services. To illustrate, in a study of adult 2-year college students in New York State, Mangano and Corrado (1980) found major incongruities between student needs in five categories (academic survival skills, personal-social development, instructional policies and practices, administrative policies, and student support services) and available college services. Eliason (1977) studied female students enrolled in community colleges and found great need for, but limited experience with, vocational aptitude testing and counseling, support services, and vocational curriculum in high school or college. In a study of older students, Roelfs (1975) found that students 22 years of age and older have instructional preferences and counseling needs that differ from those of traditional college-age students. Older students need encouragement that higher aspirations are realistic, prefer instructor-centered instruction, and express specific needs for assistance in budgeting of time and balancing on- and off-campus roles. Finally, studies of underprepared learners show that students in this category experience difficulties with self-image; have doubts about their ability to succeed in college; aspire to professional or semiprofessional jobs; require comprehensive information about registration, financial aid, course placement and selection, and support services; and experience more success with individualized approaches to instruction incorporating flexible scheduling, performance objectives, learning styles information, and career-oriented instruction (Clarke 1975; Henard and Byrd 1977; and Jones, Gordon, and Schectman 1975).

A significant amount of attention has been directed to the cognitive styles and learning-related personality attributes of students enrolled in 2-year institutions. Researchers and practitioners

interested in cognitive style usually address two very practical questions: What are the effects of cognitive style on learning outcomes in students? and What modifications in instructional strategies and techniques should be implemented to improve student learning outcomes through accommodation to cognitive style?

Research conducted on cognitive style is complex and dated. The available findings do, however, provide at least a partial answer to these questions. Studies conducted by Atkins (1978) and Hunter and Lingle (1975) show that students derive meaning from their environment through auditory or visual means and through abstract or concrete reasoning. When efforts are made to diagnose the learning styles of students and to relate instructional strategies to identified styles, relationships can be observed between student preferences and performance. Furthermore, differences in personality type can be observed among students with different learning styles; certain teaching methods appear to be most productive for each personality type (Ritchie 1975). These findings have led researchers to recommend that instructional strategies should be organized in such a way as to accommodate different personality and learning styles, and that inservice activities should be regularly scheduled so that instructors might learn how various personality types contribute to learning.

Diversity in Student Needs

Students enrolled in 2-year postsecondary institutions do not comprise a homogeneous population. They range from those with advanced academic proficiency requiring little or no direction from the instructor to those with limited proficiency requiring substantial direction to produce desired learning outcomes. Knowledge of student background characteristics and learning styles is important in order to understand the diversity of needs students bring to instruction. They interact with instructors and support staff in a context delimited by objective measures such as grade point average and class attendance and subjective measures such as the ease or difficulty of learning and quality of instruction. From the standpoint of background and learning preferences, these factors influence how much students learn as well as the degree to which they are satisfied with various approaches to instruction. As the level of satisfaction increases so do student learning outcomes.

However, despite the fact that 2-year college students differ on important characteristics related to background and learning preferences, they face similar problems with respect to allocation of time to academic courses and curricula. Two-year college students are a "commuting population." They are more likely than 4-year college students to be working full time and to drop in and out of college based on labor market conditions. They experience pressures from their network of family, friends, and associates in the community that may interfere with college attendance (Alfred 1975). Commuting students are more likely to seek advice from community contacts regarding career and educational plans. They face difficulty in balancing off-campus roles and student roles at a time when maximum attention to study may be necessary to effect a successful transition from community to campus values.

It must be borne in mind that diversity exists within as well as between student groups. For example, nonworking adult learners returning to the classroom following a 10-year hiatus from formal education will have different needs relative to teaching and learning than adult learners attending classes concurrent with full-time work. Nonworking adult learners may experience doubts about their capacity to complete successfully educational requirements in a complex organization with rules and regulations governing academic achievement (Mangano and Corrado 1980). They may also lack clarity in educational and career goals compared to working adult learners.

The point of this discussion is that although data presented as representative of the learning needs of 2-year college students may not fit every member of the population, it can be established that community-based students face similar problems in allocating time and effort to courses and curricula. Also important is the fact that having gained access to classroom instruction, commuting students may find that time on task is limited by competing pressures from community contacts. Time on task is a critical element of teaching and learning in 2-year postsecondary institutions. Student outcomes are to a considerable extent a reflection of the relationship between task, time, and instructional strategies used by instructors with students having particular learning preferences.

Trends in Instructor Characteristics

Instructors as a resource in the input dimension of instructional dynamics can facilitate or constrain student learning outcomes by virtue of the motivation, interest, and skills they bring to instruction. Two-year institutions that do not provide resources and services for instructors to improve their understanding of student learning needs can inhibit the development of cognitive and affective learning outcomes. Of particular importance are the services institutions provide for preservice and inservice development of instructors. This section will discuss characteristics of instructors and the institutional services that facilitate or constrain student learning as input factors in the instructional dynamics model.

Instructors are perhaps the most poorly understood professional group in 2-year postsecondary institutions. In the research literature, they are examined at two levels of analysis: (1) as an aggregate group composed of all professional staff teaching in 2-year colleges and (2) as subgroups classified according to part-time/full-time status and major field. Specific characteristics tabulated for the aggregate group are age, sex, race and ethnicity, personality characteristics, attitudes, motivation, highest degree held, tenure status, years of service, and years of related experience. Characteristics tabulated for instructors organized into subgroups include aggregate characteristics plus salaries, participation in governance, workload distribution, opportunity to meet with peers, professional activities and goals, institutional support, and instructional practices.

Between 1975 and 1984 the profile of teaching faculty in 2-year postsecondary institutions changed as a reflection of increasing numbers of instructors who were over 40 years of age, tenured, and have been employed at their respective colleges for more than 10 years. The total number of full-time instructors teaching at public 2-year colleges in 1976 was 83,672 (44 percent) compared to 107,023 part-time instructors (56 percent) (AACJC 1985). In private 2-year colleges, full-time instructors numbered 4,605 (51 percent) and part-time instructors 4,355 (49 percent) in 1976. By 1984, the total number of instructors in public 2-year colleges had increased to 242,458, but the distribution between full-time and part-time status remained approximately the same as in 1976. Private 2-year colleges showed an increase in the total number of instructors to a level of 9,811 in 1984 with a larger percentage being part-time (52 percent) than in 1976 (AACJC 1985).

Analysis of 2-year college instructors according to selected characteristics with direct application to teaching reveals subtle differences in philosophy and orientation to students among male and female instructors. Combining factors of sex and advanced degrees, instructors holding higher degrees were less likely to experiment with teaching strategies and were more subject-oriented than their counterparts not holding higher degrees (Kentucky Community College System 1985). Although the need for 2-year colleges to accommodate heterogeneous student bodies in courses and curricula has resulted in the implementation of innovative teaching techniques, large numbers of instructors advocate that the pace of innovation in instruction should be reduced, at least

in the immediate future (Handleman 1975). Innovative teaching techniques could result in problems such as grade inflation, erosion of academic standards, and too little emphasis on cognitive learning.

When attention is focused on the morale and job satisfaction of 2-year college instructors, data suggest that heavy involvement in routine academic tasks and professional development activities may affect job satisfaction adversely (Hill 1983). Research studies focused on various aspects of job satisfaction—eligibility for tenure, salary schedule and fringe benefits, working conditions, employment practices, participation in governance, time, and reputation—show that escape and disengagement are typical responses of instructors facing unfavorable work conditions (Armes and Watkins 1983).

Part-time instructors in 2-year colleges provide an excellent example of the effect of work conditions on job satisfaction. Comprising more than 50 percent of the total faculty in 2-year colleges in 1985 compared to 40 percent in 1971 (AACJC 1985), these instructors are hired on the premise that they will save substantial sums of money, produce flexibility in curriculum and course scheduling, and lend valuable experience to the instructional program. Yet, problems abound with respect to their role in instruction, resulting in questionable work conditions and flagging morale. Nationwide surveys reveal that part-time instructors have less teaching experience than full-time instructors, have taught fewer years at their current institutions, have less input into the selection of materials used in their courses, assign fewer pages to read, use fewer instructional media, recommend or require fewer out-of-class activities, and place less emphasis on written assignments in determining students' grades (Friedlander 1980). Part-time instructors were also less aware of campus activities and less likely to use or have access to instructional support services. In terms of professional development, they were less likely to read scholarly journals, to hold membership in professional associations or attend professional meetings, and to request release time; however, they were more likely to express a need for interaction with colleagues and administrators (Friedlander 1980). Professional development programs are not likely to alleviate this problem; research data indicate that a majority of part-time instructors work in institutions that do not provide professional development programs for temporary staff (Fent 1979).

Instructors in 2-year postsecondary institutions also differ when examined in terms of their distribution across disciplines. Survey data reveal that instructors teaching in science and math were apt to be younger than humanities and liberal arts instructors (two-thirds were less than 45 years of age in 1979). Science and math instructors were more likely to be male (78 percent) and to indicate that teaching unmotivated students was their most pressing problem (McKelvey et al. 1979). Humanities instructors had taught for a longer period of time (60 percent had taught 11 or more years in 1983) and exhibited a more balanced sex ratio (Brawer 1983). Instructors in the humanities, fine arts, and education were seen by students as more effective teachers because of their student-oriented approach to teaching compared to instructors in other fields who were perceived as maintaining more of a subject orientation (South, Hill, and Morrison 1975). These findings are buttressed by later research that showed that qualities such as "original," "stimulating," "adaptable," "systematic," and "student-centered" seemed important in distinguishing more effective instructors from less effective than "knowledge" (Vickers 1979). Female instructors were perceived as more effective than their male counterparts because of their student orientation (South, Hill, and Morrison 1975).

Trends in Professional Development

How do instructors with diverse characteristics in different disciplines effectively teach students with diverse goals, interests, and background characteristics? Can faculty successfully utilize single-mode instructional strategies in a classroom environment marked by diversity in student learning styles? What training and background experience are necessary to prepare for instruction in 2-year colleges? Answers to these and related questions are best formulated through knowledge of preservice and inservice instructor training strategies employed in 2-year colleges.

Preservice Training and Preparation

By the very nature of a heterogeneous student population and comprehensive program/service mix, 2-year college instructors must be able to handle diverse instructional settings (i.e., teaching the liberal arts student with transfer goals, the vocational student with career goals, and the developmental/remedial student with learning deficiencies). Preparation for effective teaching requires adequate preservice and inservice opportunities. To a considerable extent, however, instructors are dissatisfied with existing preservice programs (Carnevale 1978; Case 1976).

Several different models for preservice training have been advanced since the mid-1970s. These models have two basic forms: (1) university-based programs that prepare 2-year college instructors through integration of graduate courses and campus teaching and (2) campus-based and managed programs that prepare instructors through exposure to the philosophy and style of operation of 2-year colleges through on-campus seminars and workshops.

University-based preservice programs focus on broad training of instructors in subject fields and current issues in 2-year colleges that need to be understood by faculty as they develop classroom strategies and materials. Subject-field training is supplemented with graduate courses in education and seminars directed to systematic evaluation of teaching methods in the academic field. Theories of learning are investigated as they relate to the subject field and relationships with other disciplines are determined as a method to ensure integration of student learning (Carnevale 1978; Chambers 1976; Moodie 1975). The final year of preservice training may be spent student teaching at a 2-year college if cooperative arrangements have been established with regional institutions. Instructors successfully completing university-based preservice programs should be able to digest information intelligently and order it rationally in a way that meets student needs and learning styles. They must be able to develop instructional strategies that integrate events in the perceptual field of the student and they must be interested in teaching as a method to produce value-addedness in students, not to advance their careers.

Campus-based and managed preservice programs focus on the provision of structured teaching internships and the organization of seminars and workshops for prospective instructors to improve their understanding of student needs and characteristics. As interns, instructors receive partial or full salary while teaching reduced loads and devote program-generated extra time to induction activities (Case 1976). During the course of the preservice program, interns learn to examine critically their own philosophies and values in relation to instruction and participate in close study of various instructional strategies, curriculum designs, evaluation methods, interpersonal relations, and communication skills. In addition, interns become familiar with their particular college of employment and 2-year colleges in general through lectures, seminars, readings, guest speakers, field trips, and observation of college services and personnel. Prospective faculty and continuing faculty interact through intern-mentor relationships. Experienced faculty also conduct "classes" on special topics and serve as professional development facilitators.

Close professional cooperation between universities and 2-year colleges is required for successful implementation of campus-based and managed preservice programs. Although most programs have been designed to blend the content and theory of instruction learned in graduate study with the dynamics of instruction learned in the classroom, efforts have also been made to investigate the role of knowledge in society, to examine current issues in 2-year college instruction, and to investigate the use of knowledge in other disciplines.

Preservice programs represent an important investment of time and resources in the preparation of 2-year college instructors. They also represent a limited investment. Essential for professional development are instructor orientation and inservice programs that provide continuous opportunities for improvement of performance through access to knowledge about effective instruction.

Orientation to Instruction

The composition of the student population in 2-year colleges has changed. The entry of more part-time learners, adults, women, and minority students into established institutions has important implications for the orientation of instructors to instruction. Instructors have always expressed dissatisfaction with orientation programs designed by administrators as an efficient method for dissemination of information about policies and procedures prior to employment (Neyens 1977). Orientation programs designed for administrative convenience do not constitute sufficient preparation for professionals about to encounter a diverse and rapidly changing learner population. Orientation programs organized around the use of materials and procedures to introduce new instructors to student characteristics, learning modes, and instructional support services constitute an important resource commitment by colleges interested in improving instruction.

Two-year college educators concerned with faculty understanding of and involvement in instructional dynamics have typically designed handbooks and instructional models to acquaint new instructors with the special mission of the 2-year college and with teaching strategies and support services that enhance effectiveness (Elwood 1976; Hillsborough Community College 1980; League for Innovation in the Community College 1979; State University of New York 1980). The emphasis in handbooks is placed on policies, regulations, procedures, and general information designed to orient faculty to the mission of the institution. Information is presented describing the history, mission, and philosophy of the institution, distinguishing characteristics of the student body, and support services that can be used by instructors to develop instructional strategies in accord with student needs. Also presented is information about regulations concerning course load, attendance, class codes, grade books, grade reports, course outlines, textbooks, classroom visitations, field trips, and service hours for campus offices.

Self-instructional modules are used by some 2-year colleges to acclimate new instructors to specific conditions of the teaching-learning environment. Profiling student, curricular, and governance characteristics of the 2-year college, these modules acquaint instructors with guidelines for selecting instructional methods that enhance learning, instruction, and student/instructor interaction. Special emphasis is given to individualized instruction as a method of adapting an increasingly diverse student body to standardized academic requirements. Techniques such as contract learning, self-instructional packages, self-paced modules, personalized systems of instruction, and audio-tutorial methods are described and presented to new instructors for use in instructional planning. Some colleges have provided release time to new instructors to participate in self-paced, individualized orientation programs (Wenrich and Eakin 1978). Other colleges have developed workshops and curricula to provide formal instruction in current teaching techniques to new faculty beyond the point of initial employment (Hammons and Jaggard 1976). Curricula are

designed to extend the objectives of faculty orientation into the classroom through presentation of material that describes the following:

- The philosophy of the 2-year college and the role of the instructor therein
- The teaching-learning interface including the 2-year college student, learning behaviors, cognitive style, and characteristics of effective instructors
- Teaching strategies for large and small groups
- Instructional aids and their use
- Instructional evaluation, testing and grading
- Planning for instruction, including lesson planning, task description, and lesson preparation

Despite these innovative approaches to faculty orientation, most 2-year institutions concentrate on efficiency and information dissemination in orientation programs. For a discussion of emerging characteristics of 2-year college instructors, learning environments, and students that mandate different approaches to orientation, see Deegan and Tillery (1985).

Inservice Development

Whether instructors develop early insights into the teaching-learning process in 2-year colleges through preservice training or through orientation, they experience a continuing need for development of teaching skills while in contact with students in the classroom. Malaise and "burnout" are common problems experienced by instructors following prolonged exposure to students in courses taught on a regular basis. Inservice programs are an important resource to improve the quality of instruction as well as to enhance instructor attitudes toward teaching and their relationships with students.

In recent years, an increase in staff development has been seen in relation to rising rates of student attrition, increasing numbers of part-time instructors, and decreasing opportunities for mobility among full-time instructors. Several states (Colorado, Florida, Maryland, and Alabama) have examined the educational needs and professional characteristics of instructors and established statewide programs for staff development (Carbone and Torgenson 1983; Preus and Williams 1975; Valentine et al. 1980). In most states, 2-year institutions conduct inservice activities for full-time instructors, provide some degree of funding for attendance at professional meetings, and offer sabbatical leaves (Wallin 1982). Available data also suggest that most instructors maintain expressed interest in inservice development activities although many institutions do not provide organized staff inservice activities to part-time faculty (Grymes 1977; Pedras 1983).

Most efforts toward institutional and statewide programs for inservice development can be divided into several components that are essential for program implementation: determination of the training and development needs of instructors, administrative organization for the program, development and organization of curriculum components, identification of target groups to be served, logistics of the training program, program funding, and support services. Strategies employed for instructor development in inservice programs vary among institutions, but a basic inventory would include the following:

- Instructional modules
- Workshops
- Annual orientations
- Task forces
- Teacher resource centers
- Small grants/fellowships
- Survival guides
- Newsletters
- Mission councils
- Faculty handbooks
- Specialized support services
- Travel
- Sabbatical leaves
- Research experimentation
- Continuing education
- Guest speakers
- Faculty mentors

Modular instruction packages, handbooks, and workshops are used to improve faculty knowledge of different dimensions of the teaching-learning process. Among the topics included in instructional packages are student motivation, institutional mission and goals of 2-year colleges, class management, testing and test construction, effective media utilization, individualized instruction, improvement of teaching skills, safety and liability, adult teaching psychology, lesson planning, instruction for students with special needs, new students, methods of instruction, characteristics of an open college, implications of stages of adult development for colleges, and instructional problems in implementing open learning programs. Because most part-time instructors maintain employment outside of the college, training strategies are accomplished through short-term, on-campus activities held during predetermined breaks in the academic calendar.

Although efforts undertaken by 2-year postsecondary institutions toward faculty and staff development have increased since 1975, many instructors believe that "staff development" is a euphemism for "staff evaluation." They are suspicious of the motives of administrators implementing professional development programs for any reason because they have been exposed to unworkable, ill-planned, and potentially destructive schemes presented as a panacea to instructional problems (Buchan 1979).

Instructor resistance can act as a brake on the thrust of staff development programs. Thus, it is important to understand the needs and goals of instructors and to develop mutual trust between parties in the teaching-learning process. Among the innovative programs to improve the effectiveness of staff development programs through increased awareness of instructor needs are the Learning Assistance Support System in the Washington Community College System, the "Return to Industry" Program at Hagerstown Junior College (Maryland), the Competency-Based Teacher Education Program at Mt. San Jacinto College (California), the Faculty Fellowship Program at Burlington County College (New Jersey), and the Instructional Clinic at Lord Fairfax Community College (Virginia). All of these programs focus on diagnostic, prescriptive, and/or prognostic instructional considerations drawing on the competencies and resources available in the institutions as well as those provided by external organizations. Participation depends on instructor needs and interests, institutional resources, support services, and collegial relationships. The goal is to improve teaching effectiveness through involvement of instructors in inservice programs that strike a balance between institutional needs and faculty interests.

Resource Characteristics

Resource characteristics play a more obvious role in instructional dynamics than student and instructor characteristics. The availability of financial resources serves to facilitate or constrain the development and use of multiple strategies for instruction. For example, instructors note that innovation is discouraged in a climate of resource decline because academic budgets are not sufficient to support such innovative teaching strategies as individualized, media-assisted, and computer-assisted instruction, nor are they sufficient to permit opportunities for professional development. Administrators note that in periods of financial hardship, expenditures for non-FTE producing activities such as instructional and staff development are primary targets of reduction (Alfred 1978). Numerous writers and practitioners have lamented the tendency of colleges to curtail program and staff development at the time in which this activity is most needed—periods of financial hardship when new organizational thrusts are needed to rebuild programs and resources (Mingle et al. 1981; Mortimer and Tierney 1980).

A cursory review of the literature in 2-year college education reveals that current resource characteristics present a frustrating dilemma: how to maintain the vitality of instruction and continue to nourish innovation and change in the face of the tightest resources and lowest level of public support that 2-year institutions have seen in at least three decades. On the surface there is an intriguing incongruence between the reality of reduction and the essentially optimistic outlook that is inherent in instructional development. To illustrate, how will it be possible for 2-year college instructors to develop new strategies and techniques for instruction in the face of such problems as the following:

- Real resource declines in past years as great as 20 percent of academic budgets
- Cumulative deficits in expenditures for equipment, physical plant renewal, and even salaries, that collectively may be as great as another 10 percent or 20 percent of institutional budgets
- Rising costs in some sectors of college expenditures, such as energy, computing, and libraries, that could consume all of the budgetary flexibility that institutions can generate during periods of financial stress
- A projected demographic decline of as much as 20 percent or 30 percent in the traditional college age population that will—to a degree not yet determined—affect enrollments and therefore the resource base

- The lowest rate of instructor turnover, and therefore of internal budgetary flexibility, that has been known in over 30 years

- Decreasing opportunities for professional development, and therefore decreasing attractiveness of academic careers for new junior instructors in many academic departments

- Prolonged duration of the problem, continuing from nearly a decade in the past to perhaps a decade into the future, that precludes temporizing and bridging solutions and creates the discouraging sense that the necessity to manage these sorts of problems will foreclose any constructive and significant efforts at instructional development

In short, do 2-year college instructors and administrators talk meaningfully about improvement in instructional dynamics when institutions at the present time typically have less than 1 percent of their annual budgets to apply to development and innovation?

DISPARITIES BETWEEN STUDENTS AND FACULTY IN THE INSTRUCTIONAL PROCESS

The discussion of student and faculty characteristics underscored the fact that different parties bring different interests, needs, and values to the instructional process. This section will discuss the teaching and learning implications of different faculty and student values in the input dimension of instructional dynamics. These implications are both psychological and behavioral; they range from periodic expressions of anxiety by faculty and students to withdrawal from college. If these disparities are not addressed in the Educational Process dimension through innovation in instruction, instructors and students could experience dislocation from courses and curricula, resulting in diminished effectiveness.

Values, Perceptions, and Expectation Differentials

A cultural lag exists between the expectations of 2-year college students and the instructors who teach them. Students want mobility in occupation, income, and social status and they require specific services from the college. Operating within the framework provided by a community-based role set comprised of friends, relatives, and colleagues at work, students do not view learning as an end in itself, but rather as a means to an end. They are passing from one stage of development to another and will leave the academic environment for goals that are part of another environment. Instructors will remain in the same environment, and, in many cases, have discontinued their progression through developmental stages. Secure in income and employment and with deep roots in the community, instructors will have limited opportunities for professional development other than those provided by their current institution. Participation involves risk. Instructors secure in their profession will not be anxious to exchange "comfort" for "mobility" even if professional opportunities include long-term gains in income and stature.

Disparities are also evident between 2-year college faculty and students with respect to the attitudes they carry toward teaching and learning. Previous research (Roberts 1979) has shown that students favor "sensing" (the immediate realities of direct experience) whereas instructors favor "intuition" (the inferred meanings, relationships, and possibilities of experience). When asked "what is good teaching," students and faculty may respond differently as a function of differential stakeholder values in instruction.

Students define good teaching in terms of the quality of their learning experience. *Instructors* define it in terms of learning outcomes. *Administrators* focus on efficiency, and members of the *community* focus on effectiveness in helping individuals function in adult society.

Faculty consider some elements of learning essential to the curriculum while students express no interest in them at all (Weis 1985). Students tend to select instructors on the basis of (1) willingness to provide assistance, (2) feedback from other students, and (3) clarity in presentation of material (Lee 1975). Faculty tend to see themselves and their students in a scholarly context. Data obtained in a recent survey of college and university undergraduate students by the Carnegie

Foundation for Advancement of Teaching (1986) revealed that 37 percent of undergraduate students were bored in class, 40 percent said no professor at their institution took a special interest in their academic progress, 42 percent said most students were treated like "numbers in a book," more than half regarded increased earning power to be the primary direct benefit of a college education, more than one-fourth said that college was much like high school, and only 18 percent rated their institution's advising programs as highly adequate. Data in a companion study revealed a predominant view held by instructors that neither their students' academic ability nor their institution's academic standards were adequate (Carnegie Foundation for Advancement of Teaching 1985).

Faculty Alienation

Whether examined in aggregated national studies or in single institution studies, research data reveal a "considerable mismatch" between 2-year college climates and student expectation. In addition, the data reveal a discordance between faculty expectations and student performance (Alfred 1986; Carnegie Foundation for Advancement of Teaching 1986; Richardson 1985). Collectively, the data depict a student body whose aspirations seem to be undercut by the campus environment itself, particularly by instructors who hold different values, perceptions, and expectations of instruction. Congruence between faculty values and expectations and student interests provides an important incentive to instructor commitment and interest in teaching (Alfred 1986). Student performance that meets or exceeds instructor expectations serves to reaffirm commitment to teaching because investment is reinforced by observable outcomes. When instructors cannot observe the connection between teaching and student learning outcomes, the rewards for effective teaching are few and commitment is apt to decline. To illustrate, ineffective teaching could result when inflated instructor values and expectations are applied to underprepared learners who are experiencing academic difficulty in a learning environment that is affected by the pressures of technological change and diminishing resources for instructional innovation. As faculty incentives are eroded by inadequate student and programmatic resources, motivation may decline and alternative sources of reward may be sought. Instructors may diminish their commitment to class preparation, academic advising, and instructional development in an effort to compensate for perceived inequity between inputs and benefits (Hobelaid 1986).

Instructors who are dissatisfied with the relationship between inputs and benefits are not likely to engage in innovation. Such a condition may decrease commitment among instructors and hence have a significant impact on instructional dynamics (Kast and Rosensweig 1985). Conflict among faculty organized into groups is often negatively related to teaching effectiveness and the performance of the institution as a whole.

Student Attrition and Retention

Just as there are problems with instructors associated with disengagement from instruction, students experience problems with academic progress, persistence, and satisfaction in a 2-year postsecondary institutions. National reports speculate that less than 30 percent of enrolled students complete the associate degree with percentages ranging from a "high" of 65 percent in selected allied health programs to a "low" of 15 percent in liberal arts programs (data collected by the National Center for Education Statistics). Institutional studies of student flow indicate a rule of thumb for persistence. Of any entering class, approximately two-thirds will return for the second semester, one-third for the third semester, one-quarter for the fourth, and after the initial opportunity to graduate, 20 percent will return for the fifth semester (Coker et al. 1985; Duncan 1985; Peralta

Community College District 1985). Differences are evident among students holding different goals for college study. Of students whose goals are to complete degrees or certificates, a majority return for additional study while less than one-half of students holding different goals return (Brunner, Packwood, and Wilson 1978). When analysis turns to the relationship between selected life antecedents and persistence/ nonpersistence factors, data reveal that evening students are more likely to drop out than day students, that older students are less likely to return than younger students, and that reasons for nonpersistence include goal accomplishment, financial difficulties, family (personal or transportation) problems, job changes, and dissonance with instructors and the campus environment (Coker et al. 1985; Jones 1985).

The phenomenon of attrition poses two sets of problems for instructional dynamics. The most obvious problem is the effect on continuity and efficiency in instruction, particularly in advanced courses, when student contact with the institution is short or segmented. Instructors and administrators experience frustration when the time, effort, and support services they provide to acclimate students to college study result in marginal outcomes. Despite these efforts students drop in and drop out, thereby limiting the predictability of enrollment in advanced courses and rendering ineffective institutional efforts to facilitate adaptation to college study.

The effects of attrition on the quality of instruction as measured by faculty and student expressions of satisfaction or dissatisfaction are less obvious than efficiency problems, yet they are significant obstacles to improvement of instructional dynamics. Many colleges are unaware of the range and type(s) of social behavior that must be employed by instructors in the classroom to interest and retain students. For example, students note that instructors do not maintain personal interest in their academic progress and that they feel treated "like numbers in a book" (Carnegie Foundation for Advancement of Teaching 1986). Administrators have noted that some faculty have not maintained close surveillance over market forces, thereby resulting in irrelevant and outdated approaches to instruction (Alfred 1986).

Conclusion

Disparities between students, instructors, and administrators in the instructional process implicit in differential values and expectations, faculty alienation, and student attrition have deleterious effects on instructional dynamics. The results of national research studies recently released by the Carnegie Foundation for Advancement of Teaching point to a series of tension points that divide faculty and students. These tension points are listed in figure 2.

Disparities between faculty and students reflected in these tension points influence instructional dynamics by determining the teaching/learning modes that can be successfully employed with students. The next two sections examine the Educational Process dimension of instructional dynamics with particular attention to teaching strategies and instructional support services that have been implemented in 2-year institutions to facilitate learning.

Tension Point	Students	Instructors
Background Characteristics -income -education -parental occupation(s)	Lower socioeconomic status	Middle class
Referents for behavior	Community-based persons (Family, friends, community contacts, and so on)	Campus-based persons (Colleagues, administrators, and so on)
Financial security	Job and income insecurity	Job and income security
Expectations of education	Advancement in earning	Academic achievement
Approach to faculty/student interaction	Interest in purposeful contact with faculty outside of classroom	Avoidance of contact with students outside of classroom
Student utilization of academic support services (library, tutoring, learning laboratories, and so on)	Low rate of utilization	Expectation for high rate of utilization
Perception of campus	Extension of high school	Collegiate
Perceptions of student quality	Adequate	Inadequate
Perceptions of institutional standards	Adequate/rigorous	Barely adequate
Potential for mobility	Mobility	Nonmobility

Figure 2. Tension points that divide students and instructors

INSTRUCTIONAL STRATEGIES

From a goal of expanded access in the 1960s and 1970s, 2-year colleges have moved to a goal of academic excellence in the 1980s. Although the open access philosophy led to the influx of many poorly prepared students, the teaching methods of the 1970s have persisted. Only in the 1980s have instructors begun to deal with the problems presented by diverse students with differing learning rates and styles. Two-year colleges are now in the midst of an instructional revolution in which individualized, self-paced methods have become the focus of consideration. As the movement toward individualized instructional modes has intensified, a concomitant shift in emphasis from teaching to learning has occurred, requiring major role changes for college instructors; in the 1980s they will be as skilled in the diagnosis and treatment of student learning problems as they are in their disciplines (Cross 1976). An important consequence of this trend is that traditional control concepts such as credits, grades, and semesters may be replaced by flexible control concepts implicit in self-paced, competency-based instruction.

Trends in Instructional Strategies

Although it is fairly simple to distinguish between traditional and nontraditional strategies for instruction, it is more complicated to distinguish between categories of nontraditional instruction. Most nontraditional instructional strategies are developed by 2-year institutions in response to several basic decisions made in course construction: (1) what needs should the strategies satisfy, (2) how should student achievement levels and needs be assessed, (3) what are the enrollment criteria as well as student characteristics and circumstances, (4) what is the sequence of courses, (5) is the selection of teaching methods appropriate to learner needs, and (6) what department organization and resources are available for instructional innovation (Bligh 1975).

A review of research on instructional strategies in use in 2-year colleges since 1970 reveals little empirical data relative to the assessment of different instructional modes such as individualized instruction, programmed instruction and computer applications, mediated approaches, affective approaches, and peer tutoring. The available literature focuses on trends in instruction and concludes that such trends reflect the following concepts:

- Change is developmental and a consequence of such interacting factors as instructor, instructional encouragement, student personality, and prior educational experience.
- A diversity of instructional approaches is desirable in 2-year colleges.
- A set of basic categories should be constructed to aid instructors in deciding what instructional methods to adopt.
- A basic instructional model should be designed by instructors in each course.

Instructional trends reflect a movement toward teaching modes that involve clearly articulated objectives, course content divided into relatively small information task units, task units arranged in

sequence to maintain course continuity, supports within task units to ensure success in dealing with presented information, frequent feedback on performance, and review tests to clarify how course objectives can be met. Concepts of instructional time and timing have changed to accommodate more minicourses, modular instruction, and short courses. The concept of learning space and facilities has changed to serve adult learners pursuing an external degree in off-campus situations. Finally, the literature reveals that colleges interested in innovation have begun to merge counseling and instruction, have discouraged the use of normative student rankings, have implemented interdisciplinary course work, have encouraged student input into curriculum planning, and have implemented such concepts as contract learning and independent study, off-campus learning experiences, flexible class scheduling, and a sense of community among the participants.

The literature descriptive of trends in instruction focuses primarily on concepts that require implementation in order to improve learning outcomes in students. These concepts provide little information about what works in the instructional delivery systems employed in 2-year colleges. Using personal contacts as a basis for identifying colleges engaged in instructional innovation, Roberts (1979) identified 52 colleges with innovative and nontraditional educational delivery systems. At least one of the following techniques was employed at many of these colleges:

- Cognitive mapping
- Minicourses or noncredit courses
- Learning resource centers
- Contract learning
- Life-long learning programs
- Integrated courses combining subject matter from different disciplines
- Coordinated studies offering students a coherent program rather than unrelated courses
- University without walls, where students live and study in a nonclassroom environment
- Dial-an-Answer or Dial Our Listen Library Yourself (DOLLY), which provide taped information over the telephone
- Electronic systems that store videotape programs and transmit them at a very rapid rate in varying configurations
- Methods of awarding variable credit to students taking selected course units
- Campus television networks
- Electronic systems that transmit instructors' verbal and written messages by phone

A similar array of innovative instructional techniques is evident in annual compendia of articles on teaching and learning provided by statewide 2-year college systems. Consider, for example, the instructional techniques selectively implemented in State University of New York 2-year colleges described in the proceedings of a 1984-1985 instructors' conference (Burns 1985). Techniques for instruction in English courses are described in four articles covering the uses of media, the tutorial

approach, teaching the art of questioning, and using the steps of film production as analogues in writing instruction. Two articles describe interdisciplinary courses in the sciences and humanities, and a third discusses one means of involving faculty in interdisciplinary programs. Biofeedback training and the use of counselors as instructors are considered in two articles on personal development courses. Other descriptions of innovative approaches include the use of art in teaching western civilization; simulation in nursing education; a course in geometry based on inductive reasoning; ways of involving students in American Indian history; using corporate annual reports to teach the accounting language of business; competency-based instruction in art history; teaching analytic thinking in introductory sociology; computer-assisted instruction in biology; and using federal census data as primary sources in history instruction.

Modes of Instruction

There are many different classification schemes that can be used to categorize and describe instructional modes in 2-year colleges. These classifications schemes are usually based on various combinations of five elements: academic time, space, learning context, uses of instructional technology, and joint ventures of colleges, students, and employers (Adelman and Reuben 1984). Presented here is a description of innovative modes of instruction currently in use in 2-year postsecondary institutions.

Individualized Instruction

Numerous research studies show that individualized systems of instruction offer considerable potential for colleges undergoing dynamic change in the nature and needs of the learner population (Beyer 1976). Best understood as a combination of instructional techniques labeled as "competency-based education," "performance contract education," "self-paced instruction," "mastery learning," and the "behavioral objectives approaches to learning," individualized instruction has seven main features—

- students move at their own rates of speed,
- techniques of instruction are matched with learner characteristics,
- students use written study guides,
- mastery is demonstrated before students can move on,
- periodic testing is used to provide feedback to learners about performance,
- periodic attendance at lectures serves primarily for motivation, and
- the instructional system can be refined and adapted for the needs of a changing student population.

A typical course taught as individualized instruction would incorporate most of these features and would be located in one of a number of different disciplines. Instruction is individualized in the sense that it enables a diverse population of students to handle almost any course at their own speed and in an environment of their own choosing. Individualized instruction does not alter the role of the instructor, but changes the way the process is executed. Potentially serious limitations involve

instructor workload, study problems for poor readers, high start-up costs, and controversial grading policies.

Most often, individualized instruction is employed as an alternative to the traditional lecture mode of instruction. Numerous 2-year colleges have experimented with different forms of individualized instruction. Table 1 presents a brief summary of individualized instructional modes adopted by 2-year colleges between 1975 and 1985.

Cognitive Instruction

Although innovative curricula and teaching methods are often intended to maximize learning through adaptation of instruction to diverse student characteristics, they may produce negative effects in that the overall cognitive development of students may be neglected. Researchers and practitioners interested in cognitive instruction argue that innovations such as mastery learning may train students on a specific or limited group of problems but may not enhance the ability of the student to generalize to a larger domain. Among the approaches that instructors can employ to ensure cognitive development are to (1) place greater emphasis on comprehensive learning and basic skills, (2) maintain or strengthen academic standards, and (3) improve knowledge comprehension through cognitive mapping designed to match the cognitive styles of students with instructional modes used by faculty.

Cognitive mapping initially gained popularity in 2-year institutions in the mid-1970s as a technique for assessing the preferred learning styles of students. Implemented on an experimental basis in several institutions such as Mount Hood Community College (Oregon), Longview Community College (Missouri), New York City Technical College (New York), and Northern Virginia Community College (Virginia), "mapping" involved the use of models to assess dimensions of student learning and to determine modifications needed in instructional materials, strategies, and academic support services to improve knowledge comprehension. Student learning preferences in multiple learning dimensions are compared with the preferred instructional modes of faculty to determine if a "match" exists. If a match is not evident or if it is poorly developed so as to impede knowledge comprehension, modifications are made in instructional strategies to facilitate learning.

Affective Instruction

A domain in Bloom's Taxonomy, affective learning involves dimensions of student learning related to how they receive, respond to, value, organize, and characterize knowledge. Instructional modes focused on affective learning acknowledge the importance of understanding students' attitudes toward a subject as well as their cognitive knowledge of it. Affective instruction is carried out through instructor observation of student behavior in response to specific features of the learning environment (Archer 1979). Various student responses to the learning environment are considered that identify the student's position within different dimensions of the affective domain. These dimensions range from mere awareness and interest in the subject material to the internalization of knowledge as part of the student's personal value system. Instructors use this information to develop instructional strategies that move students from a level of simple interest in subject matter to internalization of knowledge, thereby establishing a cause and effect relationship between the affective and cognitive domains of learning.

TABLE 1

INDIVIDUALIZED INSTRUCTION MODES

Mode	Description
Performance Contract	Instruction delivered on the basis of a contract signed by the student indicating the amounts and kinds of course work to be performed and the grade to be received. Contracts are designed to provide students with the opportunity to obtain credits for studying alternative content as well as the usual content in texts and library assignments.
Mastery Learning	Instruction focused on student mastery of particular units of knowledge as a prerequisite for progression to advanced study work. A typical course using mastery learning techniques includes carefully developed course objectives, achievement criteria, definition of learning units, identification of learning elements, construction of diagnostic tests, and prescriptive reading materials.
Behavioral Objectives	Instruction based on a statement or series of statements developed by the instructor that specifies an action, conditions under which it will be performed and the level of performance expected. Students may work with instructors to develop behavioral objectives for a specific course.
Self-paced Instruction	Instruction based on the premise that students can work at their own rate toward standard objectives set by the instructor. Different methods can be used as the medium for instruction including textbooks, study guides, audiocassette presentations, and lectures.
Competency-based Education	Instruction focused on student achievement of specified competency levels in courses with variations in time, location, and methods of instruction. Contract elements in CBE are the educational framework, systematic structure, educational attainment, learning outcomes, and instructional processes.
Individualized Degree Program Instruction	Instruction delivered on the basis of student participation in an individually designed program for learning. Together with a degree advisor, the student defines educational and personal goals, identifies learning experiences encountered outside of college, and outlines learning activities he/she would like to pursue. Following an enumeration of the credit courses offered to help students evaluate alternative learning opportunities and plan individualized degree programs, an outline is presented of the format required for degree plans. On standardized forms, students present for approval the name of their degree and major, a statement of degree goals, a narrative rationale for choosing these goals, an outline of the courses to be taken, and the learning methods involved in each course. Sample degree program proposals are presented, along with a discussion of the role of a content specialist, an expert in the student's area of concentration who, with the degree advisor, helps the student draft a formal degree proposal.

Mediated Instruction

Because of diversity in background characteristics, aptitudes, interests, and learning styles, students often achieve low grades, manifest limited interest, and demonstrate a high dropout tendency in courses and curricula. In answer to these problems, mediated approaches to instruction have been implemented using technological aids in the classroom to improve student comprehension of knowledge. Some approaches include audio-tutorial applications, computerized media delivery systems, audiovisual applications, videotape supplementary systems, and multimedia applications. The objectives of mediated instruction are the following: (1) to improve student comprehension of knowledge through audio, video, and technological aids in the classroom, (2) to improve feedback on student comprehension during a class period, (3) to facilitate evaluation of student progress, (4) to teach the use of multimedia equipment, and (5) to provide effective methods for student self-study.

Although start-up costs are high, research studies show that students come away from mediated instruction with improved grades and more positive attitudes toward teaching and learning (Mott 1980; Squizzero 1976). Students exposed to audiovisual instruction, videotape supplements, and multimedia applications are able to improve knowledge comprehension through exposure to instructional modes that match their learning style preferences. Using different media applications, students are able to work at their own pace with instructors assuming the role of instructional managers. Increasing use of mediated instruction depends, however, on active involvement of instructors in developing mediated curricula (Coder 1983). In the absence of instructor interest and involvement through hands-on experience, participation in staff development workshops, and institutional grants, the application of media to instruction will languish in the hands of a small group of instructors on each campus engaged in instructional innovation.

Mental Skills Instruction

Enhanced proficiency in cognitive skills, critical thinking, inquiry, and perceptual skills by students as a result of specific techniques employed by instructors is the objective of mental skills instruction. Special learning modules can be designed to help instructors make effective use of inquiry techniques in promoting the classroom involvement of nontraditional learners. Inquiry learning is a teaching/learning method that requires that students use the same problem-solving processes as social scientists and historians use to address meaningful learning problems (Wright 1975). Inquiry and questioning skills are developed as students are encouraged to develop solutions to a current problem through collection of information that provides answers to specific inquiries concerning different dimensions of the problem. A related learning technique—questioning—encourages student participation in classes through questions that require careful attention to information in order to develop appropriate responses to problems (Thompson 1979). Three different types of questions are used to facilitate learning: (1) convergent eliciting questions that are designed to verify student retention of factual information; (2) divergent eliciting questions that are designed to allow a variety of answers and require the student to defend a position or develop a hypothesis; and (3) probing questions that are designed to follow up on initial student responses by probing for the correct answer or seeking an extension, clarification, or justification of a student's response.

Additional mental skills that are the foci of instruction in 2-year postsecondary institutions are critical thinking, perceptual skills, and cognitive skills. Critical thinking skills involve the ability to reason, to use concepts, and to solve problems (Chaffee 1980). Instruction in critical thought focuses on (1) learning the interdependence of language, thought, and action through examination of the effect that the common use of language has upon one's attitudes and actions toward members of

another race; (2) learning how language is made imprecise by ambiguity, vagueness, and cliches; (3) becoming aware of the mistaken identification of words with things they represent (a common practice in advertising); and (4) learning the use of emotive language in the place of descriptive, logical wording.

Perceptual skill learning and cognitive instruction focus on the acquisition of cognitive and perceptual skills in contrast to analytical skills as the foundation for knowledge integration and concept understanding (Batchelder 1975; Woodfaulk 1982).

Interdisciplinary Instruction

Learning achieved through interdisciplinary courses is difficult to implement successfully because of problems related to cost and instructor motivation. Interdisciplinary instruction involves an integrated learning environment whereby instructors in different disciplines are brought together as an alternative to traditional instruction. Survey data collected by the Center for the Study of Community College indicated that 51 percent of the public 2-year colleges offered interdisciplinary courses in 1982 and nearly 60 percent of these courses were team taught (Friedlander, Cohen, and Brawer 1983).

Two interesting models for interdisciplinary instruction were developed in the 1970s by Miami-Dade Community College (Florida) and Oakton Community College (Illinois). Miami-Dade developed multidisciplinary courses in general education through the collective efforts of instructors teaching in different disciplines. Each multidisciplinary course was developed in accordance with 26 goals of general education in six categories: Fundamental Skills, The Individual, The Individual and the Future, The Individual and Other Persons and Groups, The Individual and Society, and The Individual and Natural Phenomena (Miami-Dade Community College 1977). For each course, a rationale and a list of specific goals were presented to the instructor of record along with course objectives, teaching/learning support services, and evaluation strategies. Oakton Community College developed a "tandem course" model (e.g., natural science/social science and social science/natural science/geography) in which instructors in separate disciplines were brought together to teach a combined course. Students enrolled in tandem courses met 11 hours per week with the goal of examining a number of elements of contemporary society from biological, sociological, and geographical perspectives (Butzek and Carr 1976).

Experiential Learning

As the linkage between work and education and between life experience and education became increasingly important to 2-year college faculty and administrators in the 1970s, different strategies for experiential learning entered the deliberations of curriculum committees, academic senates, and administrative cabinets. Reflecting the growing numbers of adult students with diverse background experiences entering postsecondary education, experiential learning has taken many forms in 2-year colleges including work experience programs, experiential learning assessment, and cooperative education programs. These programs generally involve an effort undertaken by the college to relate instructional strategies used in the formal curriculum to student background experience and knowledge and skill requirements in the world of work. Evaluation and assignment of academic credit to student background and work experience is typically undertaken by instructors and academic administrators working as a team or as individuals following prescribed procedures and policies. The dimensions and depth of student experience as a requisite for successful acquisition of occupational skills or as a reflection of general education knowledge needed for adaptation to society are evaluated prior to the determination of academic credit to be awarded.

Despite the increasing number of adult learners entering 2-year colleges with substantial life and work experience, only limited efforts have been made to implement experiential education in 2-year colleges. One reason for this may be that there is misunderstanding about the relationship of "experience" to education. Questions have been posed by instructors and administrators with respect to the definition of experiential learning and its value to students and 2-year institutions. In part fueled by doubts as to the nature, rigor, and relationship of student background and work experience to traditional instruction, studies have shown that experiential learning serves to sharpen the linkage between work and education, to improve job skills, to stimulate interest in postsecondary education, and to facilitate access to 2-year institutions (*Cooperative Education in Two-Year Colleges* 1980; Helmstedter and Scott 1976; Knapp 1976).

Holistic Instruction

Traditional instructional techniques are fragmented in that limited modes of student/instructor interaction and single dimension learning are employed in the classroom. Holistic delivery systems attempt to expand the range of interaction between faculty and students through multiple learning. They involve "structuring of student success" and improvement of student attitudes toward instruction by using different learning interventions to satisfy student needs. Some interventions that can be combined in different ways to improve teacher/student interaction are the following:

- Detailed syllabi explaining course requirements and how grades are earned
- A first week orientation during which no material is presented while the instructor and students become comfortable with one another and instructional methods are explained
- Frequent, nongraded, formative quizzes to determine mastery of unit objectives and to assist students and their instructor in identifying learning weaknesses and strengths
- Peer tutoring
- Cards and assignments sent to students who missed class
- Half-hour workshops to reinforce understanding of concepts and ideas
- Multimode instructional techniques to ensure gains in knowledge and reduction in errors

Evaluation studies undertaken with different groups of students to determine learning outcomes associated with holistic instruction. In separate studies, Williams (1978) and Gordon (1979) found that students exposed to holistic instruction earned significantly higher achievement scores, significantly higher positive attitudes toward instruction than did control groups of learners exposed to traditional instruction only.

Context for Instruction

Instruction in 2-year postsecondary institutions can occur in a variety of contexts: on-campus/off-campus, small group/large group, lecture/discussion, and instructor-centered/student-centered. Although the use of the traditional on-campus lecture method of instructional delivery is recognized as important and valuable, teaching must be directed beyond mere content in order that students can

develop other skills that transcend the boundaries of an individual course. Contextual factors such as location, format, class size, and staffing require consideration in addition to the choice of instructional delivery system.

Growing interest in small group instruction, peer tutoring, team teaching, and differential staffing has been evident in the efforts of many 2-year colleges to alter the context for instruction to meet student learning needs. Small discussion groups used as a supplement to lecture-based instruction may be effective in facilitating development of students' oral communication skills, their ability to analyze and evaluate critically, their capacity to identify relationships between phenomena, and their ability to use people as legitimate sources of information (Manikas 1977). Observing that the lecture-discussion technique resulted in high failure rates among students, many colleges have implemented small group instructional techniques (Gurley 1975; Ramsden 1980). Workshops and discussion groups limited to 10 or fewer students have been used as a supplement to lecture-oriented instruction. The objective is to involve students in individual discourse with instructors and peers toward the goals of improving knowledge and reducing attrition.

Other methods involving change in the context for instruction are those related to location, academic staffing, and student support. One of the more innovative approaches involving the location of instruction is the contractual common market concept practiced by John Wood Community College (JWCC) in Illinois. Cooperative programs are established with neighboring private and proprietary colleges to expand instructional and support services for students (Heath 1977). As many as six colleges have entered contractual relationships with JWCC with the result that students are able to select from among nearly 700 unique liberal arts and vocational-technical courses each semester. Each student enrolling at JWCC individually plans an educational program with a counselor and then selects from among the "common market" colleges those courses that will lead to achievement of educational objectives. The student attending a class at any of the cooperating institutions is treated in the same manner as "native" students and has access to the activities and facilities of the cooperating schools. In addition to the courses offered through the common market colleges, JWCC maintains its own open learning center wherein developmental as well as college-level, self-paced mastery courses are available.

Innovative staffing arrangements such as faculty mentors for students and team teaching are employed by some 2-year colleges to humanize the classroom (Craig 1976; Monterey Peninsula College 1976). Other colleges have used student peers to provide tutelage and evaluation for students experiencing difficulty with instruction (Steinacher 1976).

Space, Time, and Technology

New forms of instructional delivery that involve the use of technology to alter time and space considerations in teaching and learning have emerged to complement traditional delivery systems. Television colleges, universities without walls, external degree programs, and educational brokers are examples of distance learning programs in 2-year colleges. Such programs remove barriers of time and location by providing college credit courses on a variable-entry, self-paced basis by use of instructional technology.

Technologies currently used to facilitate instruction include open circuit and cable television, instructional television fixed services, microwave transmission, cassette recordings, videodiscs, radio, computers, satellites, public broadcasting television, videocassettes, teleconferencing, and data-based instruction (Self 1983; Wyman 1983). Possessing advantages (cost-effectiveness, improved access, and advanced communication) as well as disadvantages (high start-up costs, lack of faculty time and experience, and faculty resistance), technology is the wave of the future for delivery of instruction to nontraditional learners given variation in space, time, and learning context.

Conclusion

The major finding in this section is that, in contrast to the literature on learning, the majority of the literature on instruction has been applied rather than basic in nature. The literature frequently includes descriptions of instructional modes used in a given situation. Such descriptions typically are limited to the demography of the instructional context—student characteristics, class size, teaching methods, testing strategies, and application of technology.

The literature points to the complexity of the instructional context and the many options available to instructors regarding instructional modes suitable for a particular classroom situation. It also points to specific trends in the adaptation and use of instructional strategies such as the transition in focus from individualized instruction in the 1970s to instructional technology in the 1980s. Although the literature is helpful in providing a descriptive framework in which to examine the relationship between input variables (student and instructor characteristics) and educational process variables (instructional modes), it offers little help in explaining the effects of changing resource conditions on the use of specific instructional strategies in the classroom. In essence, the breadth and depth of literature available with respect to instructional strategies may be determined, in part, by resource conditions in 2-year colleges. In a period of plentiful resources, the emphasis will be placed on improvement of teaching and learning through faculty and instructional development. A prolonged condition of resource scarcity will shift the emphasis to finance and governance and constrain the volume of literature devoted to instructional dynamics.

INSTRUCTIONAL SUPPORT SERVICES

The use of multiple instructional strategies with a diverse student population means that instructors need to become increasingly aware of support services that are available to assist the learner in adapting to the classroom. Instructional support services have traditionally been organized along temporal lines of entry services, educational process services, and exit services. Often, there is little communication and minimal integration among these services. Two-year college students have complex problems, but encounter fragmented and compartmentalized responses to them in the services provided by the college. In recent years, efforts have been made to integrate services across functions to serve the needs of special groups such as minorities, the handicapped, and adult learners.

Support Service Dimensions

Instructional support services include all of the functions--direct and indirect—performed by instructors and staff that aid learning through application of resources to the learning process. Three support service dimensions can be identified along a time sequence relevant to learners: (1) Entry Services—marketing and recruitment, admissions, orientation, assessment of prior learning, academic advising, and registration; (2) Educational Process Services—library services, media services, tutoring, career development counseling, health services and wellness programs, academic counseling, student progress reporting systems, and academic and cultural activities; and (3) Exit Services—academic program review and graduation assessment, job search, resume writing, interviewing and placement services, transfer counseling, practica, internships, experiental learning and transcript review. Within each dimension, life-cycle differences among students will influence the delivery of services.

Figure 3 describes the time sequence of the three support service dimensions. Derived from Lynch and Chickering's (1984) work on student development and Herr's (1986) work on student support services, some services, such as admissions, assessment of prior learning, job search, and job placement, will only be needed for a short, intensive time. Some services, such as educational planning and registration, will occur periodically during the college experience. Other services, such as career development or cultural activities, may extend continuously throughout the college experience. Some services such as academic counseling will be used intermittently depending upon specific individual needs. A service such as developmental assessment will change its focus to developmental mentoring and end in a review of the college transcript. Of course, not all services will be used by all students. However, when services are viewed from a holistic perspective, instructors and developmental mentors can more often identify the ways different services contribute to the goals of students.

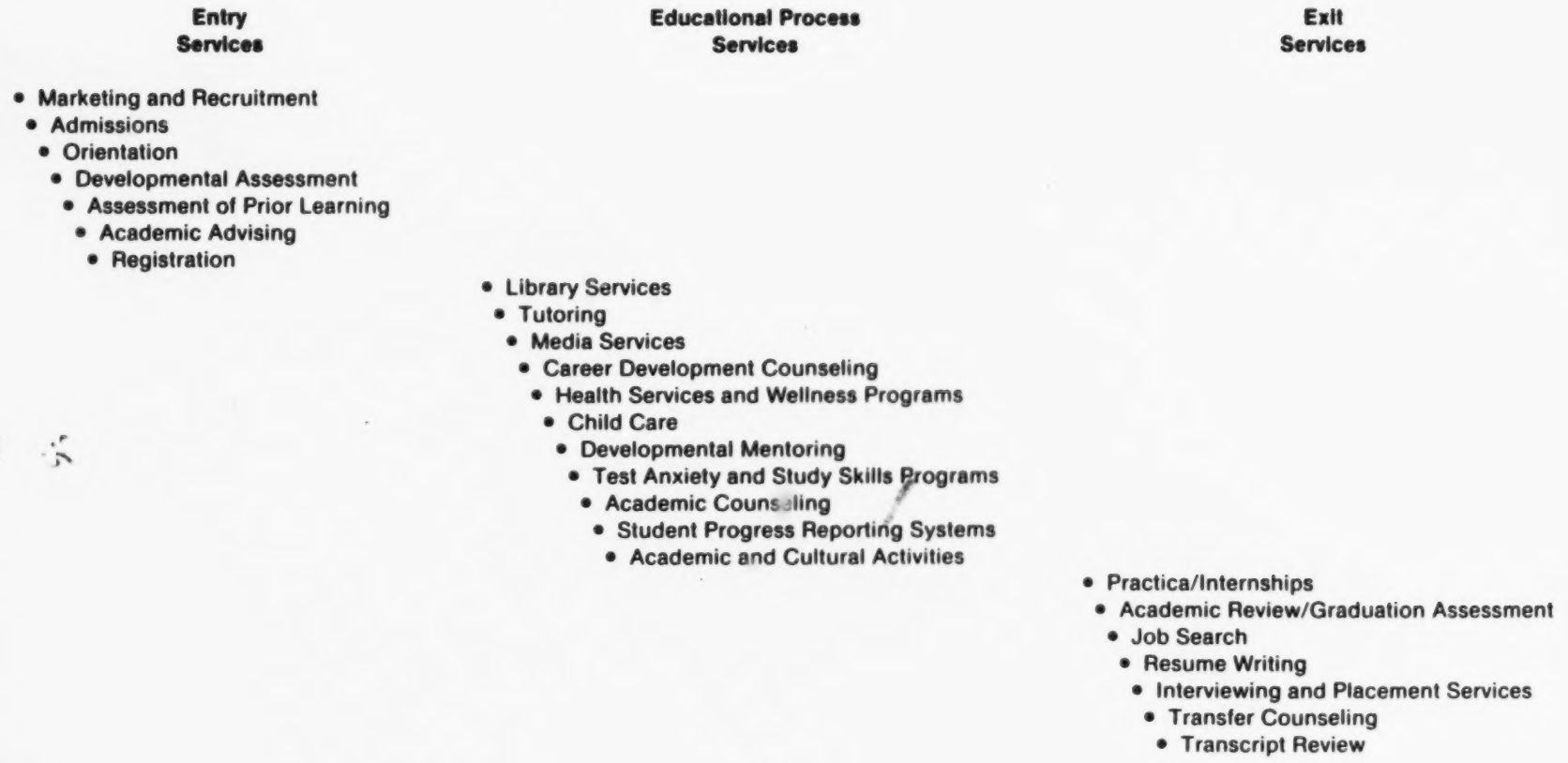

Figure 3. Time sequence of instructional support services

Some learners will move in and out of the institution depending upon external demands. They may need reorientation or at least a reacquaintance with courses and instructors. Prior schooling, work experiences, and family and community involvements constitute significant areas of learning for 2-year college students. Many of these experiences precede college and continue during and after college.

The three dimensions have some overlapping functions. Orientation workshops are part of Entry Services, but orientation may extend into the Educational Process Services dimension when orientation is viewed as an ongoing process or as part of an introductory workshop and is revised periodically throughout the college career. It is crucial, therefore, that support services be viewed as a vital part of instructional dynamics as well as subsystems of the larger learning system in 2-year colleges.

Entry Services

Students entering 2-year colleges need information about instructional dynamics, the institution they seek to attend, and the best ways to participate in instruction and support services to achieve their goals. These needs are especially strong among students from working class homes or disadvantaged backgrounds where few parents, siblings, or friends have attended college.

Admissions procedures, applications, financial aid forms, and the prospect of entering the college classroom challenge 2-year college learners. Life cycle crises often propel adult students toward college. Faculty and administrators have found that entry services that dispel anxiety by providing concise information about the instructional context in a form understandable to the prospective learner help to create an institutional image that welcomes different types of learners. For example, some 2-year colleges have worked with students to formulate questions that provide insights into instructional dynamics for use in published catalogues, brochures, and marketing materials. Questions include the following: What kind of life do you want to be leading 5 or 10 years from now and how do college courses contribute to achieving life goals? What are your current obligations and responsibilities? How will instructors and staff work with you to balance these responsibilities with those in academic courses? What resources for learning will be helpful to you and how do instructors and staff deploy these resources? Are there specific techniques that help you to learn? How do instructors teach in ways that will help you to learn? These questions ask prospective students to consider carefully the match between learning needs and teaching methods.

Recognizing that admissions decisions should rest primarily on judgments concerning the capacity of the institution to respond to student educational needs, some 2-year colleges have developed student progress portfolios to help students match learning needs and capabilities with instructional resources. These portfolios contain four primary sections: Assessment, Planning, Implementation, and Evaluation. The Assessment section provides exercises to enable the student to identify personal and educational goals, personal attributes, and preferred learning style and provides a method for prioritizing those goals. The Planning section introduces a variety of learning models (e.g., cluster, work experience programs, classroom instruction, independent study, and experiential models). Procedures are outlined for degree planning and course selection. The Implementation section presents ideas and procedures for identifying course objectives and making full use of educational resources. Evaluation is the fourth stage in the learning process, and the portfolio provides a set of directed questions to help the student evaluate learning experiences in the context of personal goals.

Orientation workshops that help students examine their needs, educational interests, and life-cycle issues are used by 2-year colleges to help students learn about themselves, the institution, the faculty and staff, and resources for learning. Because most 2-year college students pursue further learning for pragmatic reasons, instructors and academic advisors have responded to these motives by translating the learner's specific goals into practical aspects of various disciplines. Using research data describing student course and class scheduling preferences, college staff have been able to reduce attrition and improve knowledge retention by offering courses at optimum points in the student's life cycle (Noonan 1977).

Developmental assessment has become an important entry service offered by 2-year colleges to improve the match between learning needs, course content, and instructional methods. Developmental transcripts are used to help students assess their developmental tasks, academic deficiencies, career and professional goals, vocational interests, interpersonal skills, leadership abilities, and personal values. Establishing goals, timelines, and strategies and identifying instructional experiences to satisfy individual requirements through the developmental transcript contribute to the student's sense of accomplishment, self-sufficiency, and internal control (Brown and DeCoster 1982).

For many students, the assessment of prior learning has become the key to whether 2-year institutions value them as adults. Whether that learning has been derived through business responsibilities, the military, volunteer work, or intensive home study, the student who can document this learning feels validated in his or her adulthood. When institutions have taken this process seriously and provided easily understood procedures, learner self-esteem has increased. The Council for the Advancement of Experiential Learning (CAEL) has developed a statement of procedures and principles of good practices (Willingham 1977) that has served to help 2-year institutions implement this procedure. Special workshops or courses in which adults develop portfolios and learn procedures have been very helpful. This process of assessing prior learning also has provided another bridge between instructors and student development staff on behalf of the learner.

Educational Process Services

Many 2-year college students fear that they will not be able to complete academic work successfully. Some of these fears are based on previous educational failures, some on the length of time their education has been interrupted, and some on myths about personal characteristics linked to academic deficiency in writing, reading, and computing skills. Academic support programs or learning centers can offer programs that diagnose strengths and deficiencies and help build the necessary skills to begin college level work. Using other students as role models, tutors, and helpers, these centers have become instrumental in the elimination of skill and anxiety barriers.

In the past two decades, tutoring services have become an integral part of nearly every program in public and private 2-year colleges (Rounds et al. 1984). The purposes of tutoring services are to provide individual attention to students in academic difficulty, to assist students in developing effective study skills, to provide assistance and support to special groups of students such as the physically handicapped or learning disabled, and to assist the instructor in skills courses or labs. Students who are recipients of tutoring services include students without the verbal and mathematical skills required for college work, students with disabilities, and older adults seeking retraining or beginning job skills. The benefits of tutoring include decreased dropout rates, improved student grades, and financial and educational benefits for tutors.

Traditional student-centered tutorial services have been supplemented by performance-centered intervention programs to enable students to evaluate their performance in academic courses effectively. Academic alert programs have been developed and implemented to inform students periodically about their performance in relation to standards of academic progress (Losak et al. 1979). Learning resource centers have expanded their role in instructional support to teach information skills to students including library use instruction and access to knowledge through media (Orban 1980; Schellkopf et al. 1976; Voegel 1975).

Career development counseling is another educational process service provided by 2-year colleges. Many students undertake higher education with specific occupational goals yet do not know much about the qualifications needed, the characteristics of the work setting, or the life-style generated by an occupation. Many may have ignored the other components of a career over a lifespan: the roles of parent, leisurite, citizen, and retiree described by Super (1980). Career development specialists serving students in 2-year colleges provide information about life-cycle issues to help in major career transitions and associated developmental tasks.

Recreational and athletic activities help many students discover competencies or acquire new ones that contribute to good health, longevity, and lifelong recreational skills. Comprehensive health services that resemble health maintenance organizations serve not only the students, but also the students' families, the faculty, staff, and their families. Institutions with this capability also act as a referral source for the local community.

Child care programs that are educational for children and convenient for parents are provided to many students enrolled in 2-year colleges. A few institutions provide facilities for young children of students and staff. Where the institution cannot accept this responsibility, providing referral sources for student families new to the community has been helpful.

The developmental transcript mentor provides assistance to 2-year college students in planning coherent use of other parts of the learning system aside from the classroom. By assessing professional and personal goals on entry, the mentor and the learner plan a sequence of activities that will contribute to achieving those goals. In assessing prior learning, some experiences may contribute to the academic transcript and some to the developmental transcript. Throughout the college career, mentor and learner consider how extracurricular activities contribute to learning. Career development activities such as assessing career interests and strengths, exploring careers by computer or library search, interviewing professionals in one's prospective career area, volunteering in a related agency, and designing a practicum in an area of interest contribute to the learner's professional development. Personal goals of improving relationships have been achieved through individual counseling, self-help groups, and educational programs such as assertiveness training. Student associations and campus professional organizations offer opportunities to develop leadership skills. The community offers a broad base of councils, boards, agencies, and organizations in which learners become involved with citizenship and leadership projects. Colleges that have organized these experiences in a developmental transcript have helped students be more intentional about the use of nonformal activities in the achievement of academic objectives.

Exit Services

Academic program review and graduation assessment are exit services in 2-year colleges that provide an opportunity to examine the significance of the learner's educational program. Continuity of contact with the academic advisor throughout the academic career sustains the learner.

The job-search, resume-writing, and interviewing process is a critical experience for students. Some 2-year colleges offer videotapes of role-playing situations in which especially difficult questions are answered as a method of improving the interviewing skills of students. Transfer counseling and transcript review are exit services that enable students to document their personal and academic growth and to relate difficult growth dimensions to new environments. Working with students, instructors and professional staff review their descriptions of student participation in courses and curricula, cocurricular programs and groups, community activities, and volunteer experiences. Documentation of the learning derived from such activities is helpful to future credentialing and employment.

Conclusion

A comprehensive system of support services is needed to serve a diversified student population in 2-year colleges. Students differ in background characteristics, academic goals and aptitudes, and learning styles. As an aggregate, they differ from instructors in orientation to instruction, life values, and opportunities for mobility. To the extent that differences exist between students and instructors, support services are needed to facilitate student adjustment to instruction. Models exist for the organization of comprehensive support services, but few colleges are able to implement these models fully, because of cost and the need for specialized professional staff. Facing a critical need for support services, but having limited resources to implement comprehensive programs, most 2-year colleges have developed services to satisfy specific student needs within the limits of available resources.

ASSESSMENT OF STUDENT AND INSTRUCTIONAL OUTCOMES

The mounting pressure on instructors and administrators to demonstrate the benefits and outcomes of instruction in relationship to its costs has led to a profusion of research directed to assessment of student outcomes in work and further education. In addition, complex, longitudinal studies of the effects of student exposure to different instructional methods have increased in recent years. In the light of growing public interest in quality and state agency dictates for benefit-cost assessment, 2-year colleges have no choice but to view assessment as the wave of the future.

A diagram for classification of research related to student and instructional outcomes in 2-year colleges is presented in figure 4. In this diagram, research is envisioned as occurring in three different dimensions of student and faculty interaction in the instructional process: Student Involvement and Perceptions, Instructor Involvement and Perceptions, and Integration of Student and Instructor Needs.

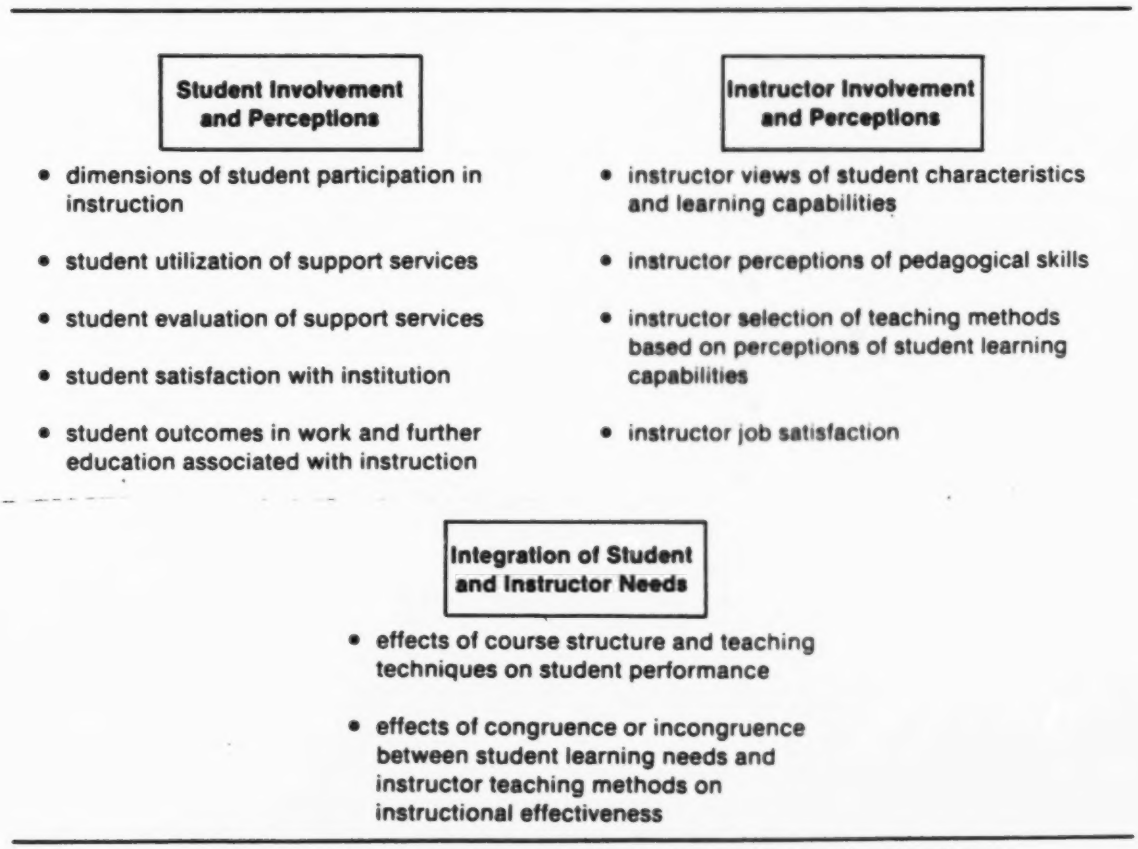
Student Involvement and Perceptions
• dimensions of student participation in instruction
• student utilization of support services
• student evaluation of support services
• student satisfaction with institution
• student outcomes in work and further education associated with instruction
Instructor Involvement and Perceptions
• instructor views of student characteristics and learning capabilities
• instructor perceptions of pedagogical skills
• instructor selection of teaching methods based on perceptions of student learning capabilities
• instructor job satisfaction
Integration of Student and Instructor Needs
• effects of course structure and teaching techniques on student performance
• effects of congruence or incongruence between student learning needs and instructor teaching methods on instructional effectiveness

Figure 4. Classification of research related to student and instructional outcomes.

Student Involvement and Perceptions

The following questions can be asked to determine the focus of assessment activities:

- What are the background characteristics of students?
- What role do these characteristics play in relationship to student participation in and satisfaction with instruction?
- Do certain types of characteristics predispose students to unique patterns of involvement in, and perceptions of, instructional support services?

Assessment efforts in this dimension of instructional outcomes have involved measurement of student participation in, and perceptions of, instruction and instructional support services. Data collected in research studies between 1975 and 1985 reveal low rates of library and support service utilization among students in relationship to faculty expectations (Bartkovich 1979; Carnegie Foundation for Advancement of Teaching 1986). Collectively, the data depict a student body (1) heavily engaged in off-campus work and relationships with community contacts that influence their views of instruction and limit their utilization of support services, (2) experiencing problems of detachment because expectations are undercut by faculty who hold different perceptions of the purpose of instruction, and (3) dissatisfied with instruction because of its perceived irrelevance to skill requisites and financial considerations in work and further education.

Instructor Involvement and Perceptions

Questions to be asked in this dimension include the following:

- In what ways do instructor views of the characteristics of students engaged in the instructional process influence the selection of teaching methods used in the classroom?
- What evidence is available to document the effects of instructor views of pedagogical skills and job satisfaction on teaching effectiveness?

Assessment efforts have involved determination of the factors that influence instructor selection of teaching methods, the predisposition of instructors to innovation as a function of background characteristics and interests, and determinants of instructor job satisfaction associated with the learning environment. Limited attention has been given to assessment of faculty involvement in instructional dynamics. The studies that have been conducted focus primarily on the degree of importance faculty ascribe to selected pedagogical skills (Elmore 1979); their perceptions of student preparedness, participation, and performance in academic courses (Carnegie Foundation for Advancement of Teaching 1986); and determinants of job satisfaction (Schuster and Bowen 1986).

Integration of Student and Instructor Needs

Questions for this dimension include the following:

- What are the effects of course structure and teaching techniques on student performance?
- What are the effects of congruence or incongruence between student learning needs and instructor teaching methods on instructional effectiveness?

Assessment activity in this dimension of instructional outcomes has involved measurement of the effects of (1) student and instructor attitudes and (2) different teaching techniques on student performance in courses and curricula. Contrary to the limited and sporadic nature of research activity in other dimensions, numerous studies are available for ascertaining the effects of different instructional techniques on student performance. These studies can be divided into the categories summarized in Table 2.

Conclusion

The findings of research appear inconclusive with respect to the effects of different instructional techniques on student achievement and performance. Innovations in instruction are supposed to produce change and improved learning in students, yet the instances are rare in which major factors involved in instructional dynamics can be simultaneously controlled in order to ascertain cause and effect relationships.

Research on change in students produced through instruction should be central to the decision-making process. It should provide answers to key questions asked by policymakers at the institutional and extra-institutional levels. What types of students are attending college now compared to those who attended college in the recent past? How do these students learn? How many students drop out or withdraw from college and for what reasons? How do different instructional techniques affect student persistence and performance in college? How well do students perform on the job, in the community, in relationships with other people? How responsive, durable, and successful are course and curricular decisions based on quantitative and qualitative information about students and instruction?

Enabling instructors and administrators to weigh and sift the evidence for various developmental alternatives, research on the effects of instruction is a critical ingredient in shaping the future of 2-year colleges. A well-thought-out research design based on realistic assessment of the impact of instruction on students invites external support and cooperation, not control. Two-year colleges should know more about their students than external agencies do. Research on instruction provides one method for collecting this information and ensures the continuing progress of colleges toward achieving their goals.

TABLE 2

EFFECTS OF DIFFERENT INSTRUCTIONAL TECHNIQUES ON STUDENT PERFORMANCE

Category: Effects of Course Structure on Student Performance

Author	Date	Institution	Objective of Study	Major Findings
Chausow	1979	Chicago City Colleges	Determination of the characteristics of courses and instructors that elicit successful outcomes in students	Courses are well structured, use materials related to students' needs, and do not rely heavily on lecture methods. Instructors take a personal interest in each student.

Category: Effects of Teaching Techniques on Student Performance

Author	Date	Institution	Objective of Study	Major Findings
Bers	1975	Oakton Community College (Illinois)	Comparison of lecture and small group discussion instructional techniques	Lectures were ranked by students as the most effective learning technique.
Ciaburri	1975	Nova University (Florida)	Comparison of traditional lecture and individualized instruction techniques.	Greater depth of knowledge and greater efforts to learn were experienced by students involved in individualized instruction.
Cohen and Diamond	1975	Boston College (Massachusetts)	Comparison of traditional programmed, and modular instructional techniques.	Students required less time for successful completion of modular and programmed instructional assignments.
Collins	1975	Boston College (Massachusetts)	Comparison of lecture/discussion and programmed text instructional methods.	No significant differences in student performance.
Hinrichsen	1975	Cerritos College (California)	Comparison of traditional lecture and personalized system of instruction)PSI) instructional techniques.	Significantly higher numbers of students using PSI achieved "A" and "B" grades in classes.

TABLE 2—*Continued*

Author	Date	Institution	Objective of Study	Major Findings
Rada	1975	East Los Angeles College (California)	Comparison of group dynamics and traditional lecture instructional methods.	Ninety percent of the students favored the group dynamics technique and said they had learned more in the course using this technique.
Scarbrough	1975	El Paso Community College (Texas)	Comparison of self-paced instruction by programmed text and small group instructional techniques.	Students offered a choice of multiple self-paced instructional methods performed better than students offered one indicifualized strategy.
Sutherland	1975	El Paso Community College (Texas)	Comparison of individualized instruction, lecture/discussion, and lecture/individualized instruction techniques.	Students using the optional lecture/ ndividualized instruction technique supported by media and personalized counseling performed better in class.
Worley	1975	St. Petersburg Junior College (Florida)	Comparison of traditional and individualized methods of instruction.	No significant differences were noted in student learning in traditional or individualized instructional formats.
Cheek	1976	Unknown	Comparison of traditional and programmed instructional techniques.	No significant differences were found between two techniques for instruction. Approximately 60 percent of the students preferred programmed instruction.
Skellings	1976	Nova University (Florida)	Comparison of traditional lecture/essay and individualized projects instructional techniques.	Students using the individualized projects technique showed greater fluency and reduced absences.
Dallas County Community College Distruct	1977	Dallas County Community College District (Texas)	Comparison of on-campus and open circuit television methods of instruction.	No appreciable change in the career interests of either group and no significant change in attitudes toward instruction.

TABLE 2—*Continued*

Author	Date	Institution	Objective of Study	Major Findings
Kates	1977	El Comino College Compton College (California)	Comparison of traditional correction-marked grading approach and tutorial method of individual conferences for grading and evaluation.	Students who received grading via conferencing had greater achievement gains than students who received written grades.
Moten	1977	Harrisburg Area Community College (Pennsylvania)	Comparison of traditional lecture/discussion and individualized approaches to instruction.	69 percent of students preferred to do work on their own, but fewer than one-half indicated a willingness to be responsible for their own learning process.
Saunders and Dickinson	1979	Unknown	Comparison of lecture-only and lecture-laboratory instructional techniques vis-a-vis student attitudes and achievement.	
Heath and Williams	1982	Unknown	Comparison of traditional and competency-based approaches to instruction.	Effectiveness of one method over the other depends on the work experience of the student.
Gibbs	1975	Fresno City College (California)	Comparison of student and faculty preferences for different teaching techniques.	High correlation between preference and practice existed in the use of demonstrations, slides, discussion, small groups, tutorials, and programmed materials, while wide discrepancies occurred in the areas of laboratory time, lecture method, homework, flexible course length, attendance options, and the availability of a modular calendar. Whereas faculty reported that homework and lectures are the prime methods of instruction, students ranked these 15th and 20th, respectively. In addition, students revealed a strong desire for greater flexibility both in the time spent in class and the length of the calendar; however, faculty rated these areas quite low.

TABLE 2—*Continued*

Author	Date	Institution	Objective of Study	Major Findings
Wiesenfeld	1975	Nova University (Florida)	Comparison of instructor and student personality typologies, learning preferences, and intellectual disposition.	Findings presented in detail in full study/instructors and students differed in learning styles and preferences.
Wyman	1975	Philadelphia Regional Community Colleges (Pennsylvania)	Comparison of instructional modes used by faculty and student preferences for the utilization of specific instructional modes in classes.	There was a slight preference among faculty for the cognitive field approach, but the students were not clearly receptive to either approach, as both approaches received some favorable and some unfavorable reactions. Cognitive field techniques that received at least 60 percent favorable reaction included concern with ideas, choice of activities, and emphasis on known reasons for misunderstood concepts. Behaviorist techniques that received favorable scores included clarity of purpose and curriculum design, rewards, repetition, and short-answer tests.

AGENDA FOR THE 1990s

In this monograph it has been shown that a number of factors are involved in the process of instructional dynamics. These factors can be described within a systems framework including (1) an environment or *context* for instruction; (2) *inputs* from the environment in the form of student, instructor, and resource characteristics that carry unique facets of the environment to the instructional process; (3) *outputs* that convey the results of instruction as determined by assessment; (4) an *educational process* dimension that converts inputs into outputs through the application of teaching techniques and support services in the instructional process; and (5) *feedback* that transmits the outputs of one period in time—the results of assessment—back to the educational process dimension as the inputs of a later period of time. All of these dimensions interact with one another to form the process of instructional dynamics.

The objective of this section is to identify major problems and issues in instructional dynamics implicit in the results of assessment that will require the attention of 2-year college instructors and administrators in the decade ahead. These issues comprise the research agenda of the National Center for Research on the Improvement of Teaching and Learning at the University of Michigan, and they are the subject of current research by scholars and practitioners.

Instructional Dynamics: Issues and Imperatives

Comprising the feedback dimension in the systems framework, the issues and imperatives worthy of attention are those related to student learning, curriculum organization, teaching and instructors, organizational context and leadership, and technology.

Student Learning

Student Participation and Involvement. Both intuitively and empirically, it is easy to accept the idea that students will learn more if they are involved in their education and devote effort to the educational task. The once predominant image of students learning by passively receiving "facts" and assimilating them through rote learning or conditioning has given way to an emphasis on active learning. Students are now seen as achieving understanding only through their purposive structuring of knowledge. There is need, however, for a fuller definition of "involvement" and for additional consideration of ways in which involvement can be fostered. The following key questions must be asked:

- How can 2-year college instructors help students become more effectively involved in their education?
- What practices can 2-year colleges change, within and outside the classroom, that affect student involvement? Once identified, how can hindrances be reduced and facilitators be enhanced?

- How can 2-year colleges help students learn in less than optimal learning situations that may exist because of their particular backgrounds or because of limited institutional resources?

Student Attributes and Learning Styles. Some researchers believe that individuals develop dominant cognitive styles based on personal characteristics and life experiences. After entering college, 2-year college students are likely to specialize in disciplines whose inquiry norms match their learning styles. Perhaps through this self-selection and subsequent socialization process, these learning styles may be accentuated. In some fields, student peer groups may be another important source for learning the dominant cognitive styles. Learnings from both academic programs and peer groups may either reinforce or oppose the formal institutional goals. Questions requiring attention include the following:

- What are the relationships between student learning styles, departmental and peer group norms, and learning goals established by 2-year colleges?

- In what ways do students learn from their peers? Can peer learning be enhanced or modified?

- In what ways can 2-year colleges use knowledge about learning styles to enhance the learning environment within specific programs?

Student Intellectual Development and Capacities for Critical Thought. "Higher order thinking skills" and particularly the ability to think critically and analyze material are generally accepted goals of higher education. Yet, insufficient research has been devoted to the definition and documentation of student growth in these areas. There are many approaches possible in this accelerating area of research.

From a developmental perspective, 2-year college students may selectively attend to certain features of a learning situation depending on their life stages and levels of maturation. Successful task completion may depend on "readiness" for certain concepts. Cognitive theorists believe that students progressively restructure knowledge as they learn rather than simply add to their store of facts; understanding is enhanced as the student develops more complex schema for organizing information. For this reason, interest has increased in investigating critical thinking and in developing methods to teach problem solving.

Some questions include the following:

- What can 2-year college instructors learn about helping students to frame problems?

- How do 2-year college students process and understand lectures and discussions? What can be learned from "online" measures of students' thoughts during classroom events?

- What do students learn from writing papers in particular fields? What can be learned from a "task analysis" of writing and its attendant cognitive process?

- What does evidence that student learning varies with intellectual maturity or other developmental stages tell us about the time periods when certain subjects are most effectively taught and learned?

Assessment of Student Outcomes. Assessment has become the topic of the day in postsecondary education and the term has taken on several meanings. Perhaps the most critical questions concern how assessment can help improve teaching and learning. Among the unanswered questions are the following:

- How can assessment of student learning be used as a tool for improving teaching and learning?
- In what forms is feedback from assessment best presented to students?
- What changes in teaching and learning are taking place in institutions where various kinds of assessment strategies are being introduced?
- What kinds of student outcomes require multiple assessments over time?
- Can assessment help 2-year college instructors identify and prevent "incidental" learning in college that might be considered counterproductive to desired outcomes? For example, memorizing for tests, becoming an independent thinker, and learning to dislike reading?
- Does assessment itself have any negative side effects on teaching and learning? In what circumstances?
- Can researchers reach consensus on standard definitions and measures of student outcomes that would provide comparability across 2-year institutions?
- What is the "state of the art" in bringing about, defining, and measuring important but elusive outcomes such as value development, social responsibility, reflective thinking, and self-assessment? What developmental efforts are needed in these areas?
- What is the level of literacy, numeracy, and technological literacy that should characterize a college entrant? A 2-year college graduate?

Curriculum Organization

Comparative studies of teaching and learning across the diverse curricula now found in 2-year colleges are noticeably lacking. Yet, various academic disciplines and career-directed fields of study may have much to learn from each other.

These research questions seem important:

- How can 2-year college academic programs be assisted in developing effective studies of curricular change?
- What are the effects upon learning of studying diverse subjects concurrently versus intense study of different disciplines at different times in the educational program?
- What lessons of student motivation and active learning can be learned and adopted from cooperative education and from education in the professions?
- How can 2-year college students in all fields gain more experience in speaking and writing skills?

Teaching and Instructors

In cautious phrasing, the National Institute of Education report (1984) supported specific preparation of college instructors for the teaching role. Similarly, other reports have implied that instructors need to become more interested in the total education of students and to take seriously their role as educators as well as their role as disciplinary specialists. Little research has been done to determine just what factors in instructor career preparation will improve student learning. Some unanswered questions include the following:

- Given knowledge about trends in 2-year college student populations, institutional resources, and related research on teaching and learning, what would be ideal preparation for the instructor of the future?
- What is known about how 2-year college instructors keep current in their specific fields of knowledge and how their continued currency can be enhanced?
- What is known about how instructors come to value their role as teachers and how this role can be enhanced?
- What new initiatives in enhancing the role of instructors as advisors appear fruitful?
- What techniques can instructors use to sense and enhance student motivation?
- In different institutional settings, what prior successes and failures of instructional development programs can be documented and used for continued improvement?

Organizational Context and Leadership

Almost absent from the literature on instructional dynamics are studies investigating the relationship between student learning needs and expectations, organizational characteristics, and leader expectations in 2-year colleges. Only a modest amount of literature exists on assessing managerial performance in domains logically related to student learning outcomes. Presidential roles have been studied most extensively, but, except for studies of demographic characteristics and career patterns (Moore 1985), studies of academic administrators' direct involvement in the teaching and learning process are scarce. Important questions include the following:

- In what ways and to what degree is academic leadership (including turnover of top-level executives and department chairpersons) related to a healthy learning climate, to faculty excitement, and to dedication to the teaching role?
- In what different ways do department chairpersons accept leadership in matters of teaching and learning? How can such leadership be encouraged?
- How can administrative processes be streamlined to allow academic leaders to focus greater attention on instructional leadership?

Within 2-year colleges, experiments have been conducted with many types of organizations believed to facilitate learning. Such special organizational arrangements and management practices include learning centers, cooperative work-study programs, consortium arrangements, and cluster colleges. Many of the reports of such experiments have been brief case studies that do not clearly

document whether or how various aspects of student learning change as a result of the program. Some questions to be considered include the following:

- To what extent are strategies related to the creation of special "learning communities" sufficiently successful to encourage broader use in 2-year college education?
- How do understandings from special organizational arrangements for learning become institutionalized in the broader educational program?

Technology

Management in many 2-year institutions is now occupied with making efficient and effective computing systems available to perform a wide variety of tasks. The following questions need to be addressed in relation to the application of technology in 2-year colleges:

- Will institutions that insist on system compatibility across departments realize a revolution in interdisciplinary dialogue?
- Will the use of certain technologies make instructors reevaluate where they concentrate their time? For example, will the use of database files encourage the instructor to shift the use of primary instruction time from data production and collection to data evaluation?
- What computer technology is available to aid instructors in their administrative and teaching tasks (tools such as authoring systems, test generators, grade books, and so on), and how does the use of such tools change the teaching role?
- To what extent has technology changed teaching styles? Is this effect different for different disciplines?

The benefits of using electronic technology over more traditional teacher-oriented instruction can be judged in a variety of ways. Examining increased capabilities of learners and increased efficiency and reduced costs of instruction, increased capacity to provide instruction per hour of time, and increased learner interest could result in more people pursuing education and a resulting higher literacy rate. Some questions for consideration include the following:

- What changes are electronic technologies bringing to 2-year college teaching materials, including textbooks and coordinated learning packages?
- What are the effects of new types of graphic presentations on learning various types of subject matter?
- What role will 2-year college libraries play in the new electronic information society? In what ways can they make a stronger impact on student learning strategies?

Conclusion

Instructional dynamics is a complex process, involving the linkage of instructors, learners, resources, technology, and organizational context factors. Until the nature and dynamics of this linkage are better understood, 2-year colleges can expect continuing questions from policymakers

and interested observers as to the effects of teaching. The cost of instruction alone should provide sufficient reason to create support for research and assessment related to instructional dynamics. Despite the intuitive appeal of "cost" and "effectiveness" issues, the vehicle for expansion of knowledge lies in the future. Replicable research at the institutional level is needed to pinpoint what aspects of instructional dynamics are effective in improving specific dimensions of teaching and learning.

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